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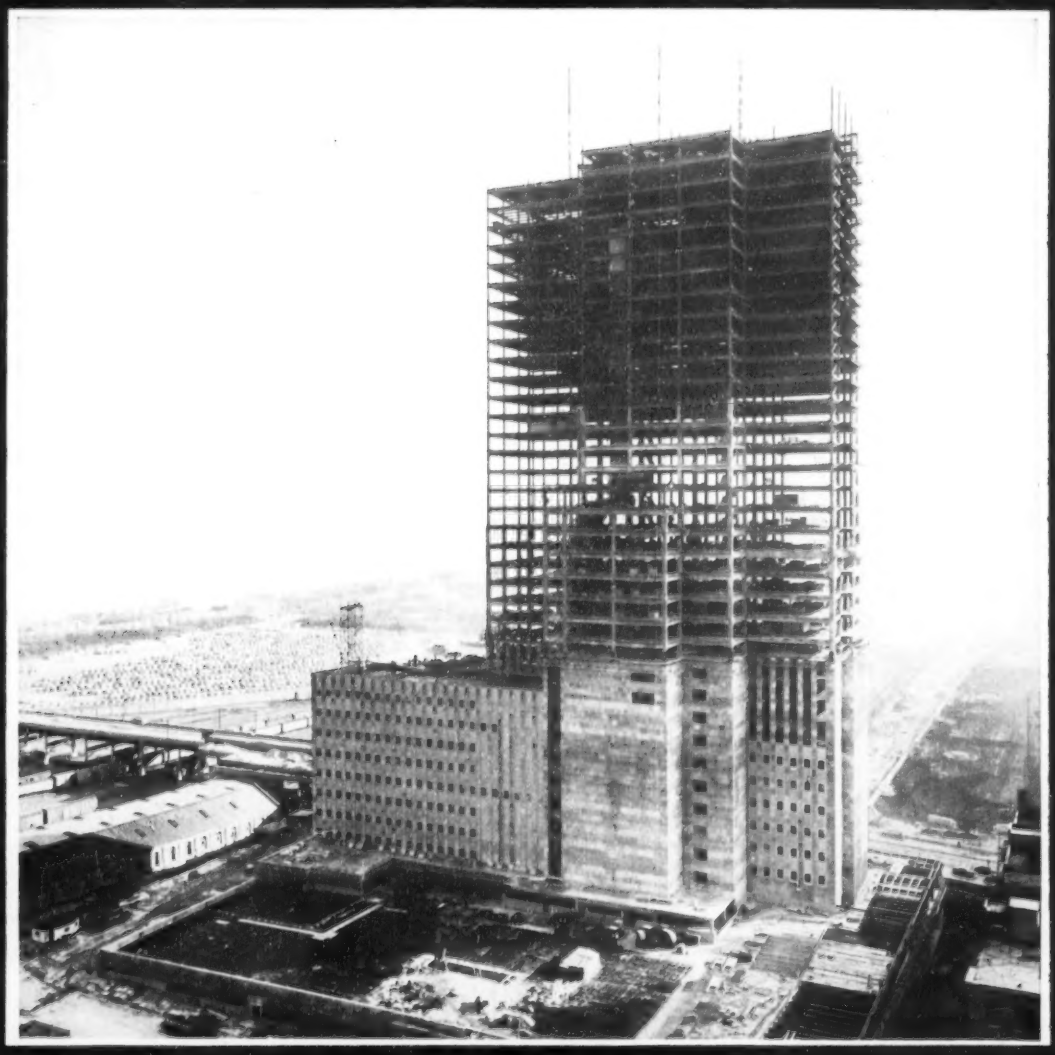

★ Sweden's underground power installations

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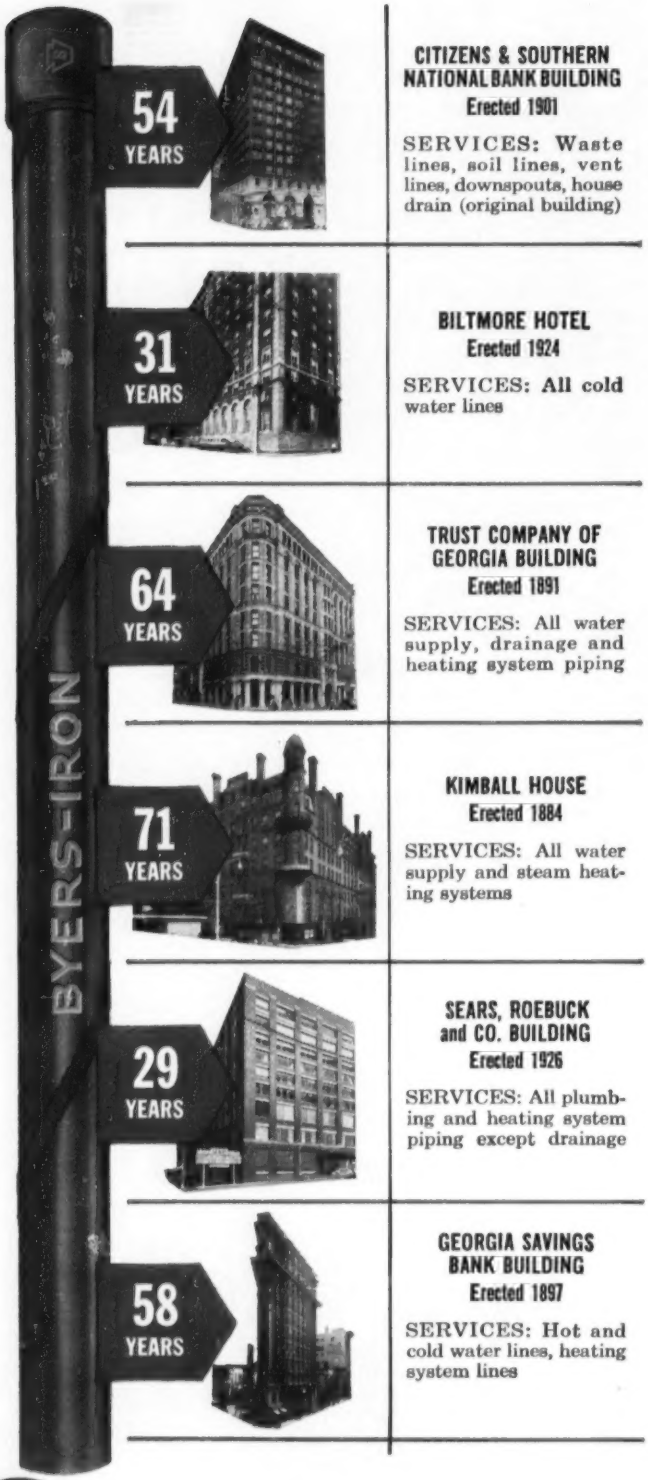

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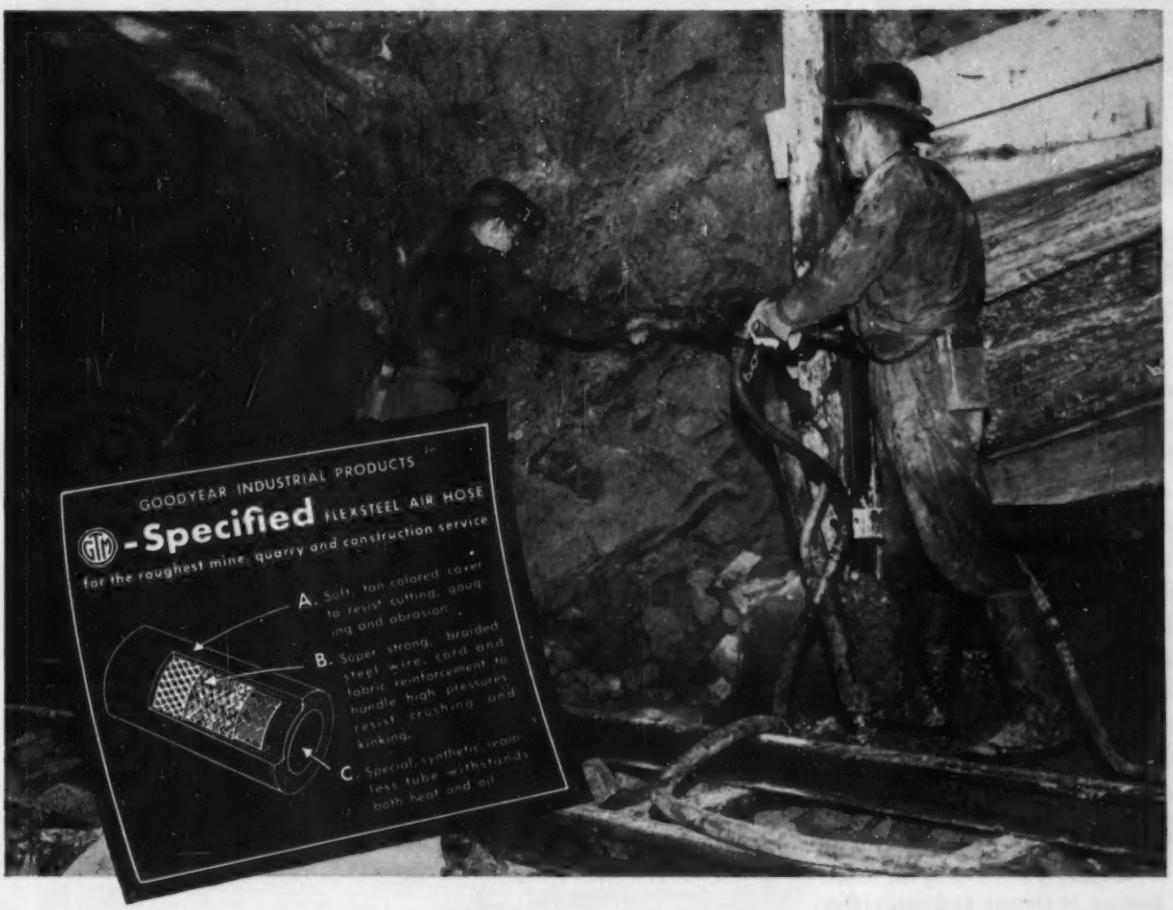
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Publisher

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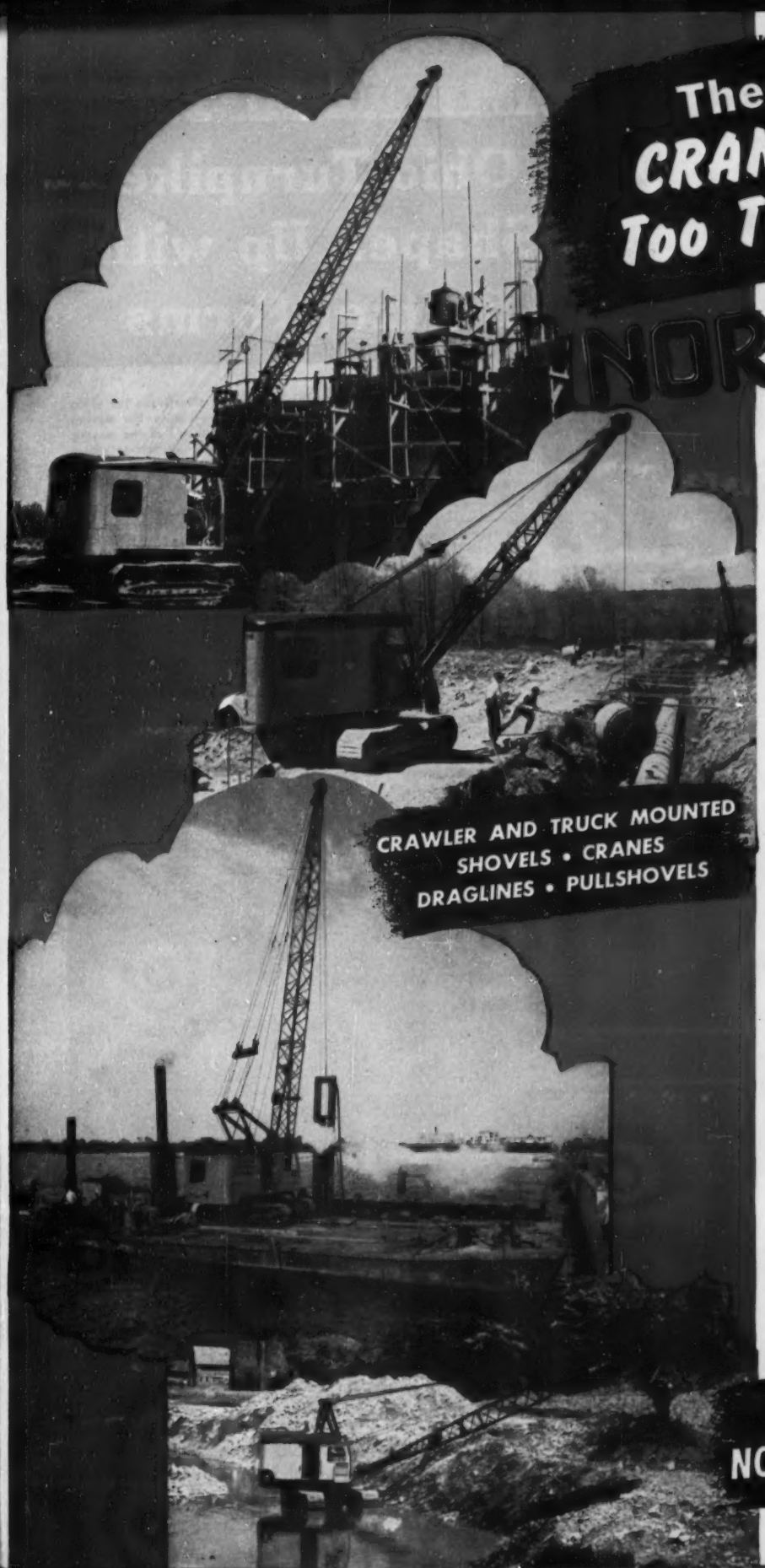

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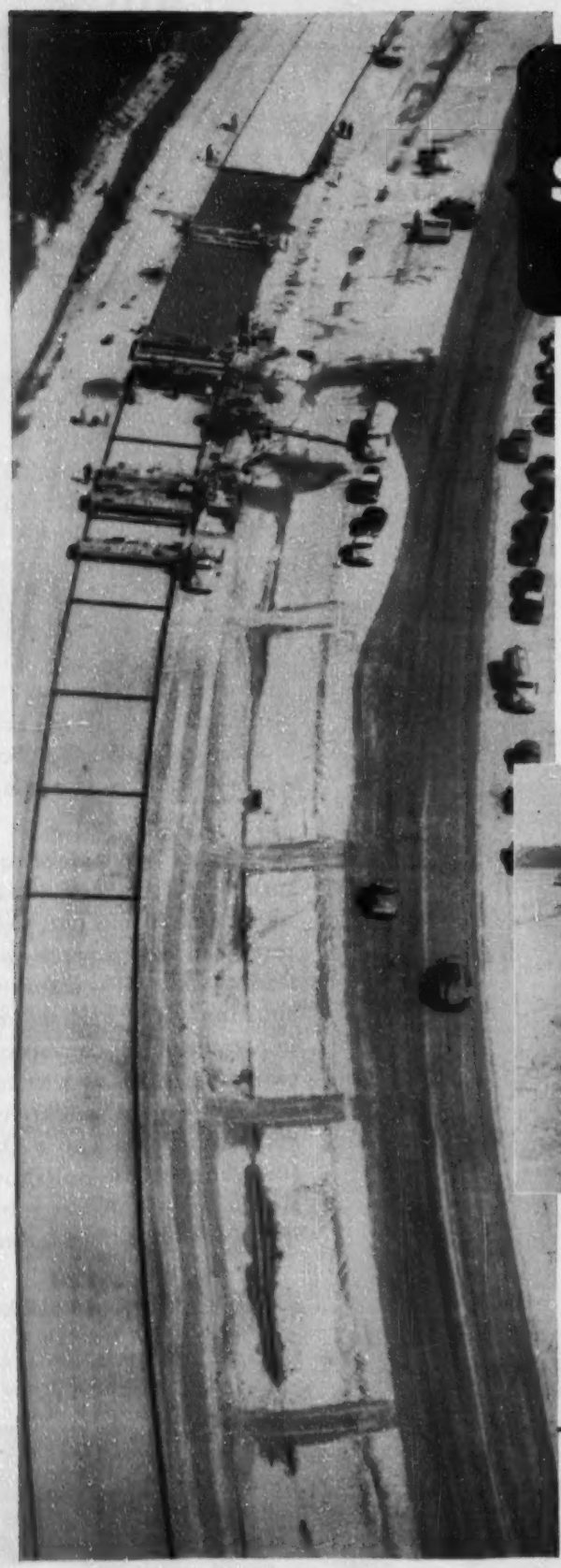

Ohio Turnpike Shapes Up with Heltzel Forms

An air passenger crossing northern Ohio will clearly see the Ohio Turnpike taking shape. If he looks closer he'll note the paving operation is underway in several locations. Ahead of the paving crew he'll see long lines of steel forms set in readiness to shape sections of the 261 mile thruway.

If he were to visit these paving operations he would note, further, that a great pecentage of these steel forms was made by Heltzel. There are several reasons for this wide preference, among leading construction firms, for Heltzel Steel Forms. First, they know that a Heltzel Form has more than 40 years' experience built into it. Experience that enables Heltzel to construct a form that will set fast and easy, align perfectly and carry the paving spread without vibration or a failure. Secondly, they know that Heltzel means service. Heltzel engineers are constantly working the turnpike, making certain their product is doing the job. Thirdly, these people know that Heltzel builds the most complete line of form equipment available today . . . that many more desirable features are found only in Heltzel Forms . . . that they can rely on a single source for all their form needs.

Isn't it just good business, then, when next you're considering forms to contact the Heltzel representative nearest you and find out why so many of the nations' leading construction firms specify Heltzel Forms right down the line?

Photos show Heltzel Forms in use on Ohio Turnpike Sections C-25 and C-26 by Western Contracting Co.

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Concrete pipe is just one of the many products manufactured in our plants across the nation. We also produce clay pipe, flue liners, both glazed and unglazed, clay liner plates and the new Amvit Jointed clay sewer pipe.

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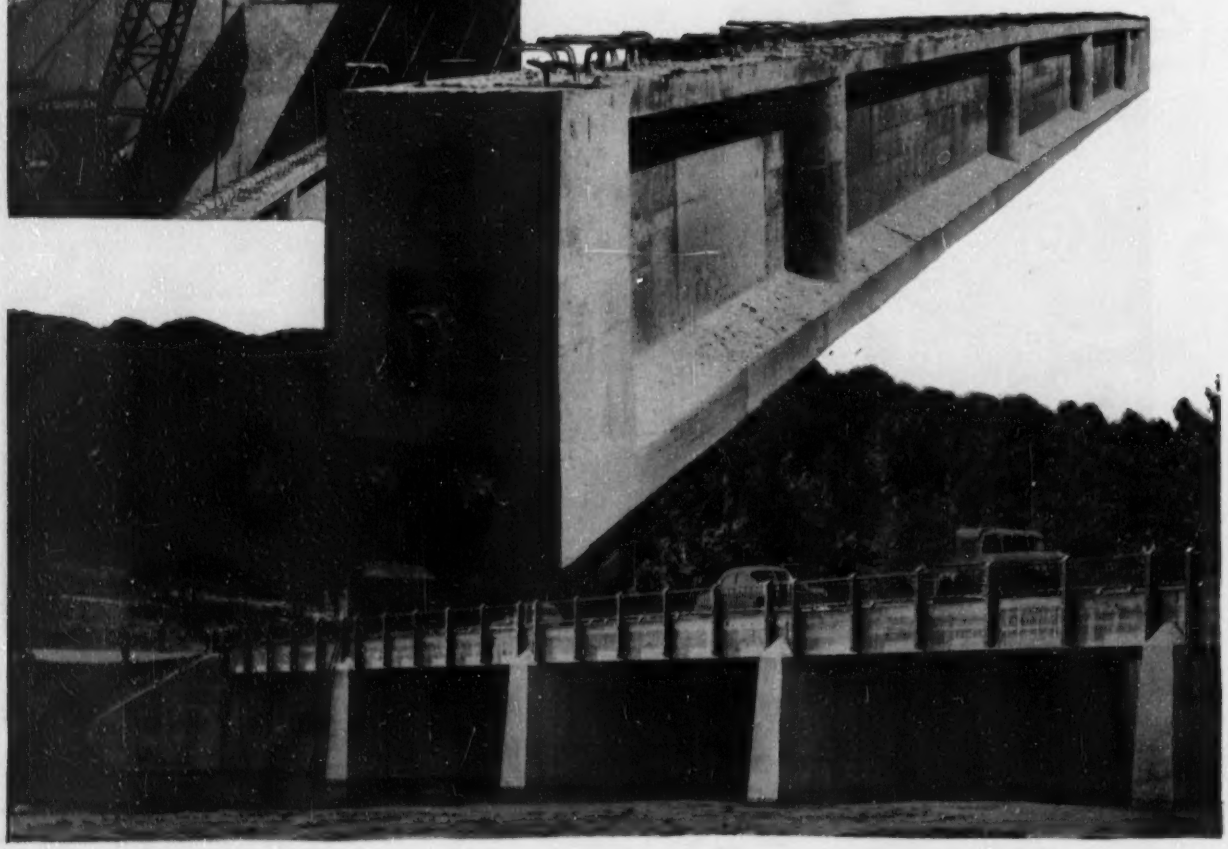
To speed construction

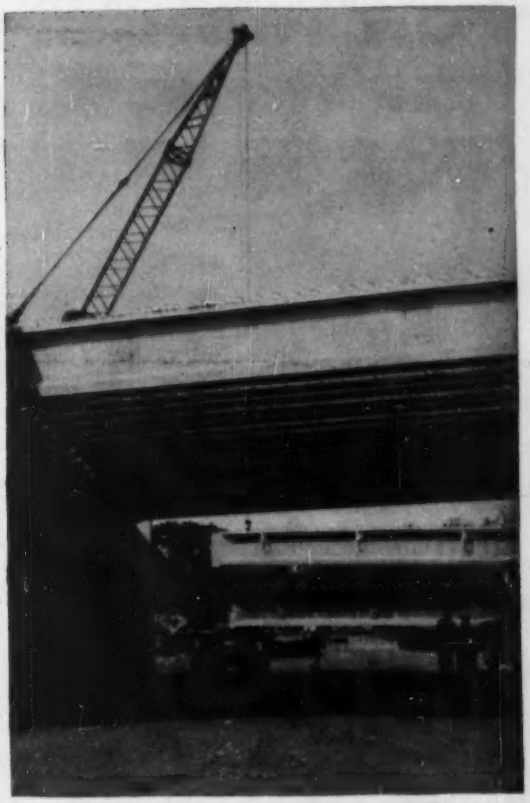
prestress with American

WHEREVER you use structural beams—in concrete buildings, bridges, or piers—better investigate the cost-cutting possibilities of prestressed concrete. Prestressed beams eliminate delays caused by bad weather; they eliminate the long wait for concrete to cure; they give you a *stronger* structure.

Prestressed beams are made at a factory, where weather can't interfere with production. They are poured, stressed, cured, *tested*, and then delivered to the job the day you need them. Just set the beams in place and grout them in—they're installed, and *you* can move on to the next stage of work without delay.



and cut costs your concrete wire and strand



Outstanding developments like American *Super-Tens* Wire and Type PS American Strand make the above advantages possible, because final stress allowable on these special wire products is approximately *five times* greater than that permissible with ordinary concrete reinforcement. This greater force binds the concrete together, prevents open cracks, gives the finished beam much better tensile strength with less reinforcing steel.

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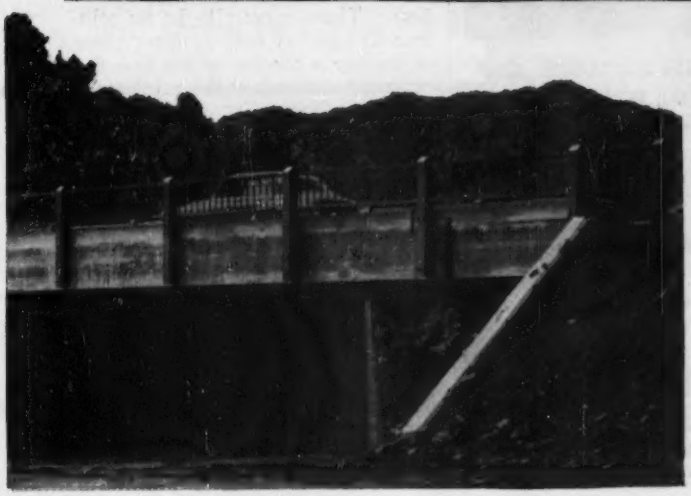

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☐ Have your local representative call on me as soon as possible.

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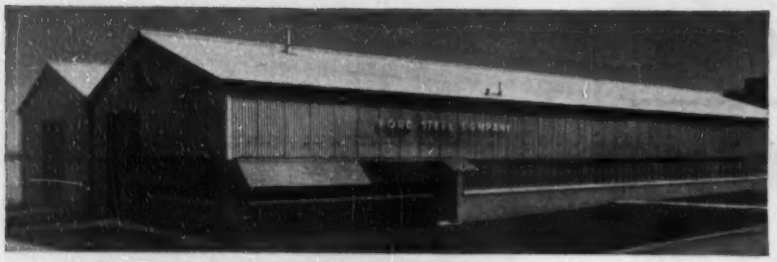
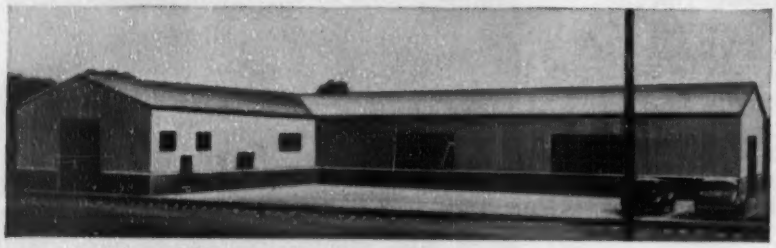


AND LOWER BUILDING COSTS...



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READER COMMENT

Airline View on Terminals

SIR: I have read the article on airport terminal buildings (ENR Nov. 18, p. 34) with a great deal of interest and find very little to criticize, indeed. My only comments are:

1. On the section dealing with unit systems, it is true that this type of terminal building requires airline separation and will cause some inconvenience to the connecting passengers; but it is virtually impossible to design a single efficient central terminal for airports serving cities of the size of New York, Chicago, and Los Angeles.

Contrary to the statement made in the article, the unit system is cheaper to build than a centralized facility, and experience has indicated also that concession revenues are greater because of their convenience to both enplaning and deplaning passengers. In other words, for very large airports, there is no choice but to adopt the unit system.

2. A distance of 600 to 700 ft should be the longest required from the ticket counter to the airplane gate.

I believe that some day we shall see an overhanging marquee, rather than portable coverings between the gate and the aircraft. Our knowledge of prestressed concrete should enable us to do a pretty good job. The old German airport, Templehof, is an excellent example of what can be done in that respect.

The greatest problem facing air transportation today is that of baggage handling and some means must be found to either expedite it or adopt railroad practice. This is a point that has been debated by the airlines' traffic departments for quite some time. There appears to be no solution in sight as long as every piece of baggage is checked at the time the passenger checks in at the ticket counter for his flight. Carry-on baggage is used on the Martins and Convairs and has been very successful, and will eventually be done with our largest equipment when aircraft are designed to permit this convenience.

3. The emphasis on revenue-producing concessions is commendable, but sight must not be lost that an airport terminal is a facility designed primarily for the expedient and efficient handling of the airline traveler. Concessions are primarily conveniences to air travelers and visitors; therefore, their location should not compromise passenger and baggage traffic flow.

(Continued on page 12)

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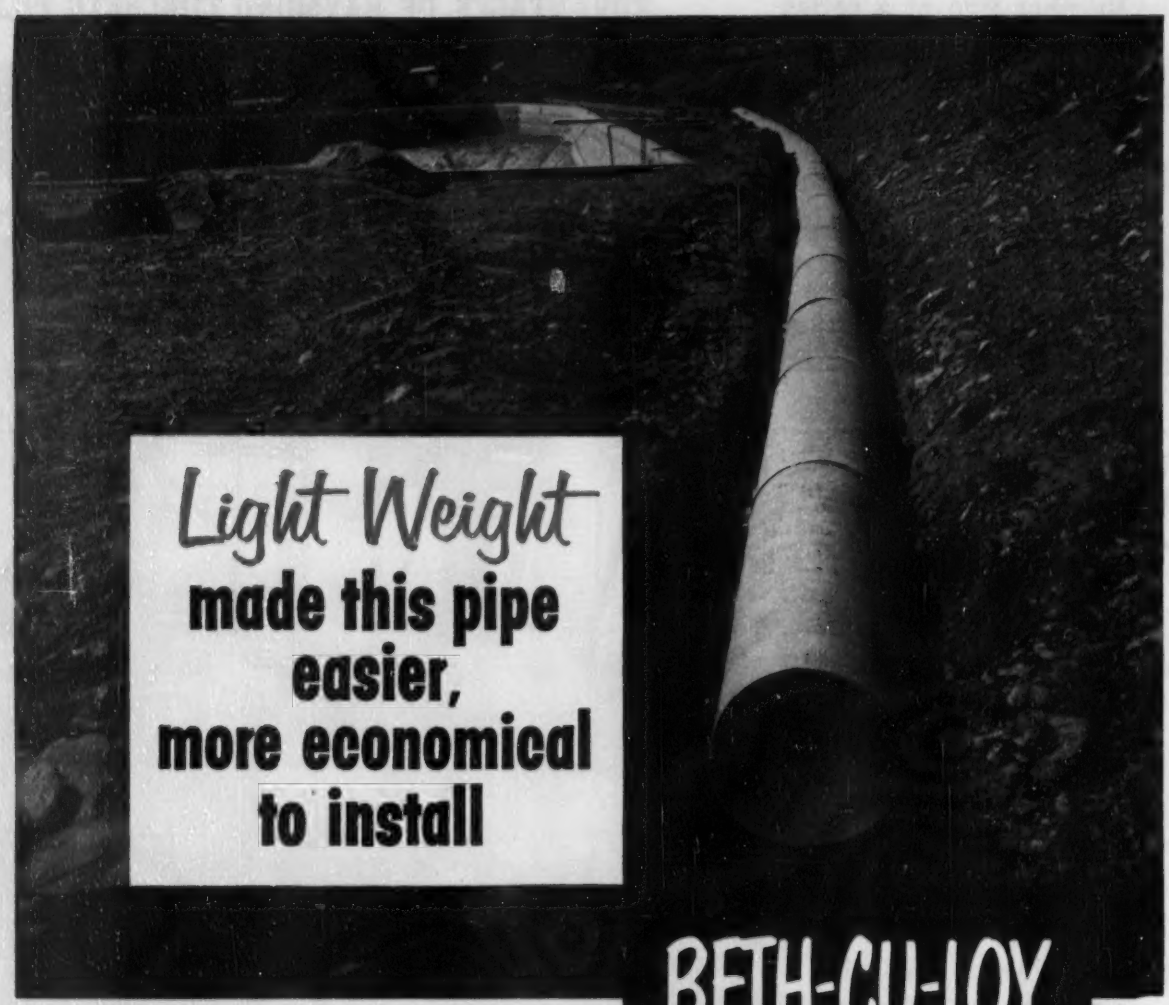

Light Weight made this pipe easier, more economical to install

BETH-CU-LOY GALVANIZED CULVERT SHEETS

No costly lifting equipment was needed on this drainage project. Just a trench hoe and a few men. This is corrugated galvanized steel pipe, so light that it can readily be man-handled into position, even in large diameters.

Yet despite its light weight, corrugated steel pipe is strong, tough and flexible. It can "take" the crushing loads, impact and vibration of modern traffic. It conforms well to grade and alignment, absorbs changes in load caused by freezing and shifting soil.

Where trenching is required, the trench need be only wide enough to admit the pipe. With galvanized steel, there's less earth to remove, less to replace, than with any other type of drainage material. No breakage to allow for, either.

Bethlehem does not make the pipe itself, but does manufacture the corrugated and plain galvanized stock used by those who fabricate it. Known as Beth-Cu-Loy, this stock is open-hearth steel, with copper added for corrosion-resistance. Additional protection against rust comes from a tight, 2-oz coating of Prime Western zinc.

Beth-Cu-Loy galvanized culvert sheets conform to the rigid specifications of AASHO. You can get additional details about this culvert sheet steel through any of our sales offices, as well as the names of fabricators who use it.

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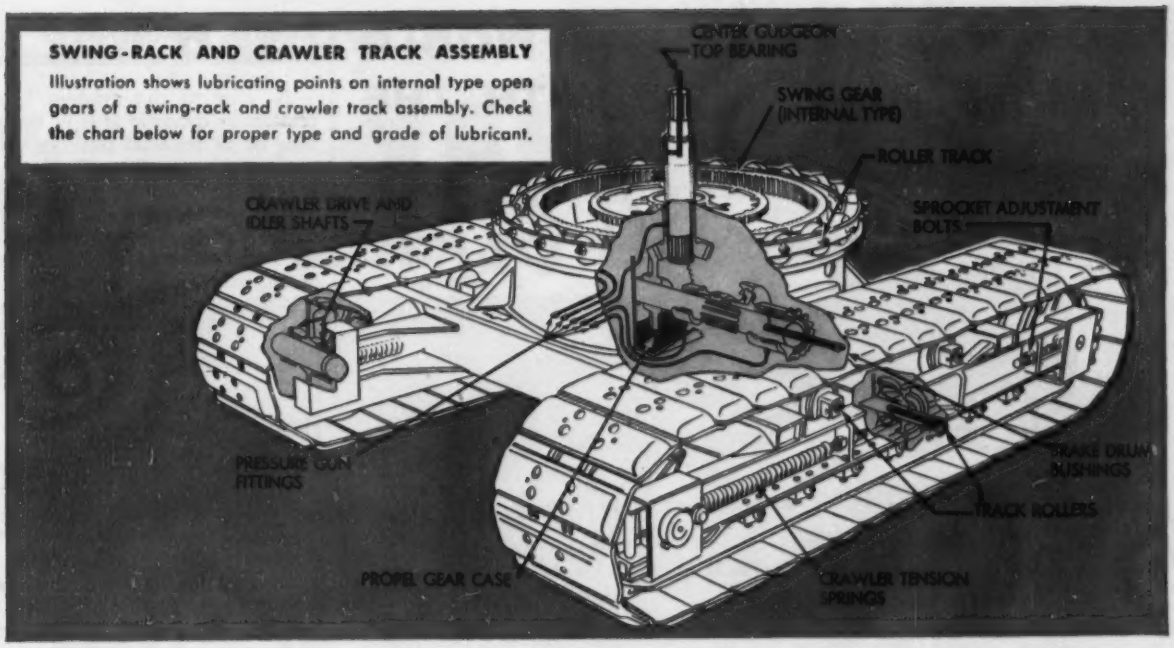
SWING-RACK AND CRAWLER TRACK ASSEMBLY
Illustration shows lubricating points on internal type open gears of a swing-rack and crawler track assembly. Check the chart below for proper type and grade of lubricant.
CENTER GUDGEON TOP BEARING
SWING GEAR (INTERNAL TYPE)
ROLLER TRACK
CRAWLER DRIVE AND IDLER SHAFTS
SPROCKET ADJUSTMENT BOLTS
PRESSURE GUN FITTINGS
TRACK ROLLERS
PROPEL GEAR CASE
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Where, how and with what to lubricate?

Lubricating procedures and suggested materials discussed on this page represent just one of the many invaluable sections contained in the newest Cities Service EARTH MOVING AND CONSTRUCTION MACHINERY LUBRICATION BOOK. For your FREE copy, write Cities Service Oil Company, Sixty Wall Tower, New York City 5.

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Part or Unit	How Lubricated	Lubricant Recommended	Grade No. 0°F. to 32°F.	Grade No. Above 32°F.
CRAWLER MECHANISM— Track rollers, idlers, track wheels, etc.				
Oliver:	Track Wheel System	Trojan Gear Oil	#90	#140
Allis-Chalmers:	Positive Seal Units	Trojan Grease	P-0	P-0
Others—				
Grease Lubricated:	Pressure gun fittings	Trojan Grease	A-0	A-1
	Pressure gun fittings	Trojan Grease	F-3-0	F-2-0
Oil Lubricated:	Hand gun or other means	Trojan Gear Oil	#90	#90 to #250
GEAR DRIVES—				
Open: Normal Condition	By brush or other means	Cisco Compound	#3-Z	#5-Z
Dusty Condition	By brush or bath	Raven Oil	#3	#7
Enclosed:	Bath	Trojan Gear Oil	#90	#140

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READER COMMENT

As long as the aviation business remains as dynamic as it is, the planning of air terminal facilities will remain a major problem. The basic concept of such facilities is flexibility, so that any subsequent modification required can be accomplished without the purchase of additional real estate or excessive capital expenditures.

CHARLES FROESCH
Vice President-Engineering
Eastern Air Lines
New York, N. Y.

Higher Ropeways

SIR: In the October 21st issue of the Engineering News-Record we have noticed an article entitled "World's Highest Ropeway, Over Two Miles Up, Being Built in French Alps" and we understand that the altitude of the ropeway is about 12,600 feet.

It may interest you to know that we have recently built two ropeways in Argentina at considerably higher altitudes than the one mentioned by the Engineering News-Record. The one ropeway at Volcan Overo is 7½ miles long and built in altitudes ranging from 8,000 feet to 14,000 feet. The other at La Casualidad is about 10 miles long and built in altitudes ranging from 13,700 feet to 17,500 feet.

PAUL LARSEN
President
Christiani & Nielsen Corp.

SIR: It will surely interest you to know that we have ropeways here in Northern Chile which are much higher. One is at 17,200 feet, located on the volcano Ollagüe, situated on the Chilean/Bolivian frontier in the midst of the Chilean sulphur mining region.

However, the Ollagüe ropeway is not the highest in the world. Some six miles to west of the volcano Ollagüe is the volcano Aucanquilcha, and here there is a tramway which reaches to about 19,800 ft. Both Ollagüe and Aucanquilcha tramways are used primarily for transporting sulphur ore, but they are also the sole means for humans to reach these sulphur workings. One merely sits in a bucket and ducks his head as the bucket enters the terminal station.

WM. E. RUDOLPH
Chuquicamata, Chile

SIR: To keep the record straight, I must call your attention to the fact that as Chief Engineer for Cerro de Pasco Corporation in Peru, I maintained what I believe is the world's highest ropeway.

(*Continued on page 14*)

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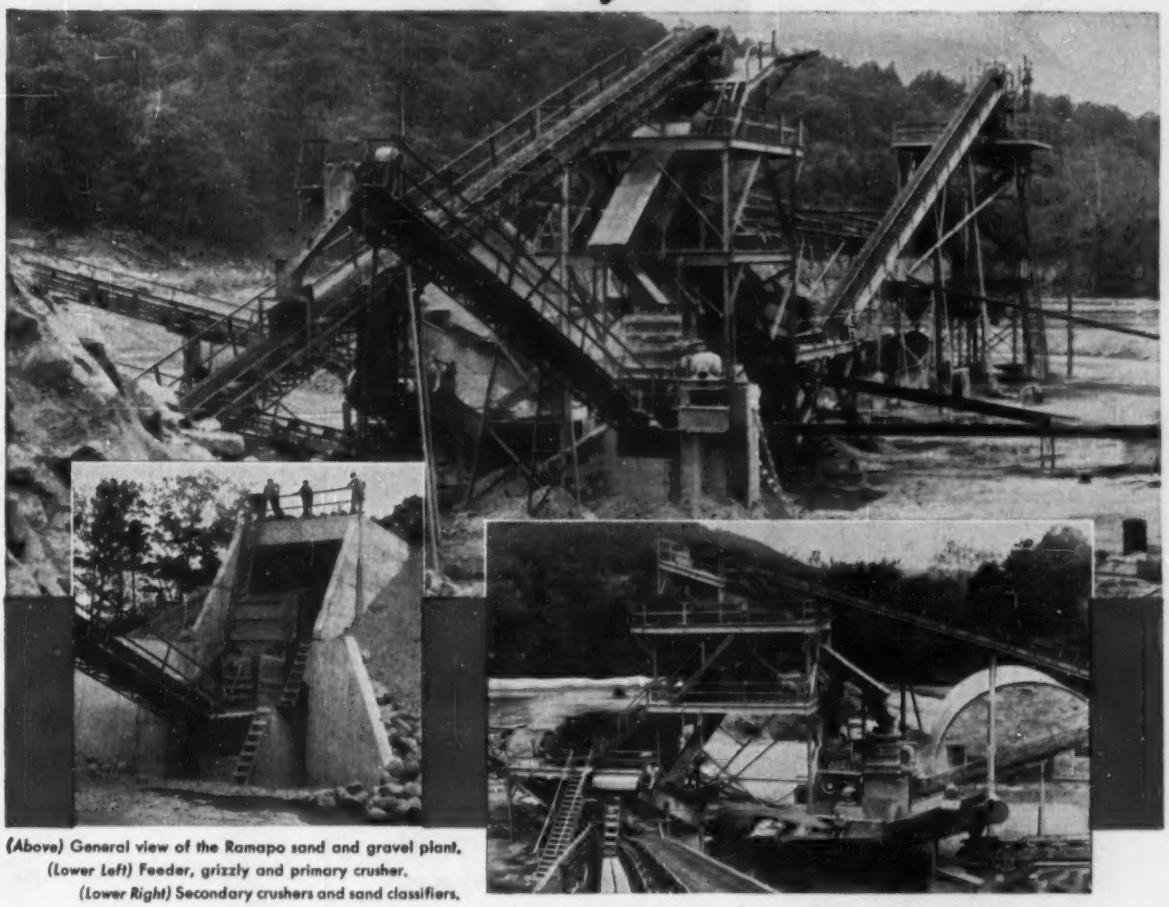

(Above) General view of the Ramapo sand and gravel plant. *(Lower Left)* Feeder, grizzly and primary crusher. *(Lower Right)* Secondary crushers and sand classifiers.

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READER COMMENT

Roebling built this monocable system a distance of 9.62 miles to link CDP[a] Yauricocha Mine at Caucha Peru to the end of their branch line railway which could go no further because of the great heights and deep canyons of the Andes. The Tramway has a capacity of 345 tons per 8 hours and at one point rises to a height of 15,680 feet above sea level. It crosses one gorge in a clear span of more than 4,000 feet, at a point 850 feet above the canyon bottom.

Please, let's keep credit for the things American engineers and American corporations like Cerro de Pasco & Roebling have built and not give away a whole mile (in altitude) to the Swiss who do not even have a peak in their country as high as the Yauricocha Tramway.

WALTER B. HESTER
The Stearns-Roger Mfg. Co.

CALENDAR

Engineering Section, American Association for the Advancement of Science, Dec. 27-30, also the **Fourth Conference on Scientific Manpower,** Dec. 28-29, both at the University of California, Berkeley, Calif.

American Road Builders' Association, convention, Roosevelt Hotel, New Orleans, Jan. 10-13.

National Association of Home Builders, convention, Conrad Hilton Hotel, Chicago, Jan. 16-20.

Engineers Joint Council, general assembly, Hotel Statler, New York City, Jan. 21.

Associated Equipment Distributors, annual meeting, Conrad Hilton Hotel, Chicago, Jan. 23-27.

Mason Contractors Association of America, annual convention, Jefferson Hotel, St. Louis, Jan. 30-Feb. 2.

Seventh California Street & Highway Conference, Institute of Transportation and Traffic Engineering, University of California, Berkeley, Calif., Feb. 2-4.

American Society of Civil Engineers, convention, U. S. Grant Hotel, San Diego, Calif., Feb. 8-11.

National Society of Professional Engineers, spring meeting, Hotel Charlotte, Charlotte, N. C., Feb. 18-19.

Annual Highway Engineering Conference of the University of Colorado, Boulder, Feb. 24-25.

Concrete Contractor's Association of Greater Chicago, Mid-West Concrete Exposition, Navy Pier, Chicago, Feb. 24-26.

National Association of Corrosion Engineers, annual conference, Palmer House, Chicago, March 7-11.

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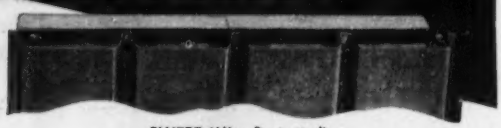
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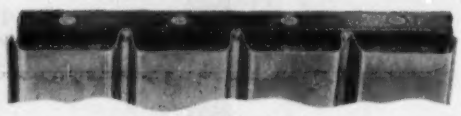
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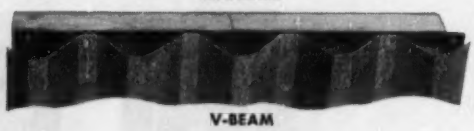
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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

GETTING CLOSER—Contractors are girding to meet a long-predicted trend in the labor movement: growing demands for state-wide agreements on wages and working conditions for the basic trades (like the operating engineers) who work on heavy construction.

That's what's behind the increasing interest of the major general contractors in state contractor groups, such as New York's Building Industry Employers.

As of now, contracts with basic trades generally are negotiated with local builders' exchanges or similar groups—and vary considerably from one part of the state to the other. Spearheaded by the carpenters, labor groups are beginning to demand much broader bases for the contracts—areas covering several counties at least. The state-wide demands will follow.

There's a kicker in it, from the employers' view, of course: broad agreements might be of real advantage to major generals, might be definite disadvantage to small generals and subs who don't handle enough big-money work.

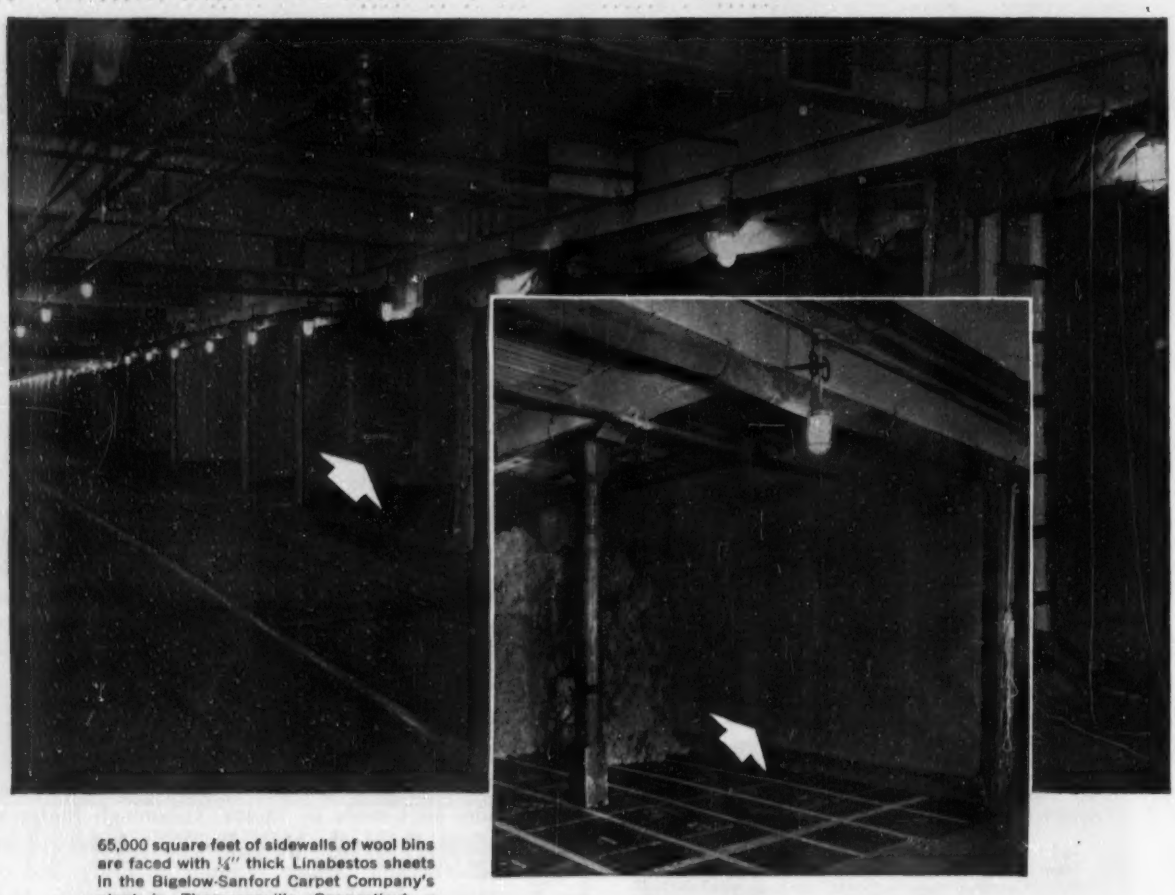
UNEASY ALLIANCE—Robert Moses threw the Port of New York Authority into an uproar last week by "announcing" a group of projects that have been under joint study by Moses' Triborough Bridge and Tunnel Authority and PNYA. Included were double-decking George Washington Bridge and construction of two cross-Manhattan expressways. Moses also said that a second Bronx-Whitestone Bridge and the Narrows Bridge (the latter to be the world's longest) "must" be built. Howard Cullman, PNYA Chairman, protested that the joint study is not complete; moreover the two agencies have not reached agreement on some points. He mentioned that the study includes a cross-town tunnel as an alternative to an elevated expressway.

MONEY FOR WATER?—It'll be worth watching moves in California for a special annual appropriation for development of water projects.

Movement started several months ago when a state legislator advocated a sales tax to be earmarked for water development. This week, State Engineer A. D. Edmonston recommended that the legislature provide $50 million annually for the same purpose. His idea: some sort of a user tax on water.

OUT OF THIS WORLD?—You'll certainly want to look carefully at the final design for the Air Force's new academy at Colorado Springs.

Says Superintendent Lt. Gen. Hubert Harmon (at a Denver civic group meeting): "An entirely new form of architecture is being developed; it is felt impossible to adapt to the site any form of architecture now existing."



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WASHINGTON OBSERVER

Hoover Commission is likely to go against Army Engineer-Reclamation Bureau merger. This would be a turn-around for ex-President Hoover, who recommended merger when his earlier reorganization commission took a look at efficiency of government operations. Hoover fought long and hard to get Presidential control of the civil functions of the Army Engineers. Engineers fought just as hard to maintain their present status, with Congress being their boss instead of the White House.

Hoover believes obstacles to removing civil functions from the Army are such that they would outweigh any gains from consolidating federal water development in one agency.

•

Eisenhower already has used the new Fanny Mae to advance building money to carry out a special private housing effort. At the direction of the President the agency may give a commitment to buy up a mortgage before the builder breaks ground. Eisenhower has authorized Fanny Mae to contract for the purchase of up to $15 million of mortgages for housing on Guam.

•

Democrat Senator John Sparkman is defending homebuilders and contractors against what he thinks is an unwarranted wholesale condemnation written into Senator Capehart's final report on his housing hearings.

Capehart charges that builders got $1 billion in windfalls on Sec. 608 rental housing projects during the postwar housing emergency. But the Democrats are balking over the language that Capehart as chairman of the committee drafted for the report.

Sparkman says the industry has a few bad actors but that the committee shouldn't put the whole industry and FHA officials under this kind of blanket indictment. Sparkman claims that Capehart's views don't present "an accurate picture of what really happened."

•

Don't overestimate talk of a changed federal position on toll roads. Undersecretary of Commerce for Transportation Robert B. Murray—who leaves office in about a month—gives the impression that the Administration has put its blessing on the trend toward toll financing of high traffic arteries.

Actually, federal aid will go only to toll-free highways if the Eisenhower team has its say. The Clay committee report and the President's message to Congress on the new highway program will make this quite clear.

They conclude that toll roads cost the road-user too much, that present tax revenues on gasoline and oil are enough to give the taxpayer toll-free roads equal to the toll roads they pay to use.

•

Early apportionment of federal-aid highway funds has paid off in increased contract awards for federal-aid projects by state highway departments. At least, that's the way Commerce Secretary Weeks looks at the figures from the Bureau of Public Roads. Weeks said that telling states six months ahead of time how much they can count on from the federal government would step up highway construction awards by $100 million in the July-September period.

Highway awards didn't quite hit the mark during that 90-day period, but the total for July-October shows the increase he talked about. Awards on federal-aid projects for the four months were up from $360 million a year ago, to more than $450 million this year.

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Big General Contractors Say:

- **The bid separation quarrel is a serious problem, but it's a problem the construction industry, itself, should solve**
- **National legislation or more state laws on the subject is the wrong way to seek a sound, equitable solution**

Specialty Subcontractors Claim:

- **The present contracting system leaves the way open for too many abuses that pinch the subcontractor unfairly**
- **National legislation is the only way to end these abuses and force separation of bids on federal jobs, at least**

Construction's Family Fight Boils Up Again

With a Congress that will be at least under new management—if not much changed in actual political alignments—two sides of the construction industry this week were busily girding themselves for another battle in the long controversy over separation of bids on federal construction work.

As in the past three years, the protagonists are the specialty contractors, spearheaded by the National Electrical Contractors Assn., and the general contractors under leadership of the Associated General Contractors of America. Key focus, of course, is on building construction, but all other types also can be affected.

NECA and its cohorts want to force the generals to name their specialty subcontractors and the amounts of the sub-bids and to guarantee that they will use the subs named. They say the generals should be permitted, on lump-sum bids, to do mechanical work, but at prices that subs would bid. These provisions would be gentler than those already written into law in some states.

AGC and its side wants to keep the argument inside the construction family. The generals want no national legislation and no more state legislation on the matter. AGC already has a form of contract that answers—voluntarily—the basic demand of the subs.

Three previous tries for national legislation have failed, although the proposition has never been actually voted down by Congress. Last year's try, for instance, got through subcommittees of both houses but never reached the legislative floor for debate or vote. No one in Washington doubts that a fourth try will be made.

• **Deep concern**—Just how seriously the general contractors take the specialists' move has long been evident. Recently, it was a subject for almost constant discussion at the AGC's annual board meetings at St. Louis (ENR Oct. 7, p. 71), and it was again in the fore in such a forum as the recent meeting at Buffalo, N. Y., of the New York State Building Industry Employers' Assn.

In the New York State BIE meetings, an unusually strong delegation of major general contractors appeared to attend a special session advertised for discussion on whether some sort of general contractor organization could be formed to speak for that group in labor relations and on legislation.

BIE's 2,600 members include all types of contractors, but the subs and small generals are in a great majority. There is no statewide AGC chapter, although there are two local AGC chapters and a state highway chapter and strong independent groups in New York City.

What the generals spoke of directly at Buffalo was the need for some statewide representation in labor negotiations—but running through their talk was the real fear that they were not being represented on legislation, particularly in the matter of so-called "bid shopping" legislation. (New York is a "separate contract" state.)

Everyone at Buffalo realized the advantages of a single organization to speak for the construction industry. But both subs and generals obviously recognized that, on many basic questions, an organization such as BIE could not speak for all. The end result may be the organization of a state general contractors' group—possibly affiliated with BIE for consultation. A committee was appointed to investigate the matter.

• **Crux of dispute**—Both sides of the controversy have recognized over the years that abuses in the contracting system do exist. The argument of the subcontractors—in some cases supported by labor organizations—is that many general contractors have made a practice of soliciting bids from subs, submitting their own bids on this basis and, if successful, squeezing the subs for further reductions in order to enhance their own profits.

AGC has recognized that this practice exists—in fact, AGC has long had a provision in its code of ethics outlawing such practice, and has pushed observance of this provision.

But the specialty contractors—although they have discussed the matter in various joint committees on both local and national levels—have chosen to push for legislation on the matter.

(*Continued on page 22*)

. . . Bid separation

State legislation calling for such separation of bids as the subcontractors advocate is on the books in New York, New Jersey, Pennsylvania, North Carolina, Arkansas, and a few other states.

On the basis of the arguments adduced by various public hearings and at industry meetings, the pro and con appears to shape up about this way:

The general contractors contend that separation of bids won't produce any money savings for anyone—least of all, the taxpayer. They argue that separation of bids throws an impossibly heavy burden on state agencies in order to administer numerous separate contracts on a single job, rather than a large single agreement.

The New York State Architect, for example, reported (ENR Dec. 25, 1952, p. 24) that his office employs 504 persons, many of whom are engaged solely in administering contracts.

The generals add that separation of contracts often is extremely costly—that they are often forced into "shotgun marriage" with subcontractors they don't know and who are not accustomed to working with others on a complex piece of construction. And the argument has been added that the subs are in fact looking for legislation to help them police their own ranks and protect them from ruinous competition among themselves.

The specialty contractors argue that present practice gives the generals too much power in negotiations, "chiseling" being a common complaint; that separation of contracts will give the taxpayer more construction for his dollar, will eliminate excessive profits.

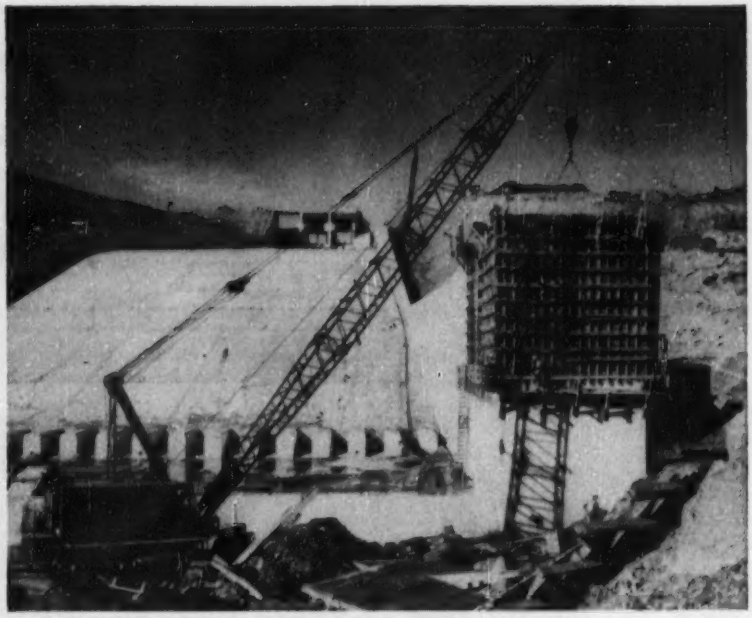
And they have an added argument: They point out that despite all good intentions of AGC, AGC's total membership (roughly 6,500) doesn't represent nearly enough generals—particularly in the building field—to make its recommendations effective.

Dam Job Draws 25 Bids—Low Is 7% Under Estimate

Lytle & Green Construction Co., Des Moines, submitted the apparent low bid of $6,270,790 for first phase construction of Glendo Dam on the North Platte River near Glendo, Wyo.

Charles Rippon, Bureau of Reclamation engineer, said the bid was 7% under bureau estimates for the first unit of the $44-million project.

The first phase includes construction of an earthfill dam, powerhouse foundation and diversion tunnel. Congress appropriated $1 million to start the project which includes two multipurpose dams on the North Platte.



WORKMEN WITH CRANE place form on the edge of the dam's spillway section.

Work on Tiber Dam Moves Forward

Bureau of Reclamation project in Montana may be raised to height capable of withstanding next spring's floods

The Bureau of Reclamation's $19-million Tiber Dam across the Marias River Valley in northwest Montana now has been raised more than 100 ft above the stream-bed foundation.

Earth placement was 60% complete when construction was closed down late last month because of cold weather. If weather is favorable, engineers expect to be able to raise the rolled-earthfill structure to a height sufficient to withstand next spring's high water.

The dam, 20 mi southwest of Chester, Mont., will be 205 ft high and about 4,300 ft long at the crest when complete. A 1,700-ft dike across a low saddle in the divide between the Marias River and Pondera Coulee now is about 50% complete, but a third of that structure has been raised to the required height and is being riprapped.

Favorable fall weather allowed crews more time to work this year than is usual. Although work was slowed to one shift during November, a total of 819,437 cu yd of embankment materials was placed on the dam. Total to date is 5,722,951 cu yd.

In both the dam and the dike, a total of 6,715,732 cu yd has been placed to date—about 59% of the total. Last month work on the dike was confined to riprap placing. During the month, 14,150 cu yd of riprap rock was placed.

The dam is being constructed as a joint venture by Guy H. James Construction Co. and Wunderlich Contracting Co. F. A. Bleeker is project manager; G. P. Stewart, grading superintendent; Ray R. Spitler, concrete superintendent, and H. C. Birdsall, equipment superintendent.

Walter A. Sandford is construction engineer for the Bureau of Reclamation. Theodore E. Mann is field engineer, and George C. Bailey is office engineer.

Joint Bid Wins Contract For Dam on Skagit River

The Seattle Board of Public Works has awarded a $14,735,107 contract to Merritt-Chapman & Scott Corp. of New York and Savin Construction Corp. of East Hartford, Conn., for construction of the Gorge High Dam on the Skagit River.

Work is scheduled to begin about Jan. 1. Completion is due early in 1959.

The dam will be a concrete structure about 670 ft long at the roadway. It will consist of a variable-center arch section about 450 ft long and a straight gravity section about 220 ft long. Maximum height of the arch section will be about 275 ft and the maximum base thickness about 70 ft. Maximum height of the gravity section will be about 285 ft and the maximum base thickness about 183 ft.

Federal Water Resources Undertakings To Be Judged by Stricter Standards

Budget Bureau revises cost allocation criteria and other yardsticks, thus aiding federal-local partnership concept

The Budget Bureau has re-drafted the standards for determining the extent to which the federal government should undertake water resources projects, re-shaping them to fit the Eisenhower Administration's federal-local partnership policy.

A wide range of future projects—power dams, flood-control facilities, water supply works, river and harbor improvements—will be affected by the new set of rules. Scheduled to take effect early in 1955, the revised regulations will affect improvements and additions to existing projects, as well as new starts.

The new criteria have these implications:

- More difficulty for the Army Engineers and Bureau of Reclamation in justifying 100% federal financing.
- Possible step up in construction of multi-purpose projects, particularly where local interests are to be the dominant factor in carrying out the financing of the projects.
- Probable attack by the Democrats on the new set of principles, since they represent the most detailed presentation yet of the Eisenhower position in the public vs private power controversy.
- Accent on partnership—partnership potentials are stressed repeatedly throughout the revised document. But the new opportunities are no cake walk for local interests, either public or private. In every case, state and local sponsors of projects—or participants in projects—must pay their full share of costs.

Right at the start, the new rules—labeled as Circular A-47, revised—say that the federal government's function is to cooperate on water resources projects and not to take them over as its own special province and keep others out. The circular then goes ahead to set up criteria that would limit the federal government to programs and projects that cannot be built as effectively by local interests.

The circular attempts to spell out uniform policies for developing water resources to best advantage at least cost and for determining which projects rate priority on a national basis.

Federal agencies must follow the rules, once they are issued, both in preparing reports on proposed projects and in submitting budget estimates to start the projects, after the work has been authorized.

• Criteria broadened—Under the new rules, the criteria for evaluating projects go far beyond the old basic yardstick of the benefit-cost ratio. To make room for Eisenhower's ideas, the new standards require answers also to questions on participation by state, local and private agencies, on the relation of each project to comprehensive development of the entire river basin in which it lies, and on the effect the project will have upon economic development—local, regional and national.

For every project undertaken by the federal government, however, the top criterion still remains the benefit-cost analysis. The new circular lays down harder requirements for benefit and cost estimates and their derivation. As an exemple, estimates of annual benefits are not to be based on simple projections of initial benefits, but are to make allowances for possible decreases in productive capacity of the project and for what might happen to annual revenues if the project became obsolete through technological advances.

• Definitions sharpened—Benefits that can be used in the benefit-cost analysis are sharply limited by the circular. They include only primary benefits which result directly from the purposes—such as flood control, navigation, power or irrigation—for which money is spent in building the project. Local secondary benefits such as commercial and industrial development cannot be considered in the benefit-cost analysis. The ban is made total in the new draft; it was almost so in the 1952 version.

No change is proposed in the list of purposes for which primary benefits may be computed and to which all project costs must be allocated. Nine purposes in the original circular reappear in the revision: flood control, reclamation, navigation, watershed betterment, electric power, domestic-municipal-industrial water supply, recreation, fish and wildlife, and pollution control.

On the method of allocating costs among the various purposes on any project, however, the new rules are more definite and specific. They direct the agencies to apply the separable costs-remaining benefits method adopted jointly by the Interior Department and the Army Engineers this year. Exception is allowed only where the sponsoring federal agency can demonstrate that another method is better because of special conditions.

• Reimbursable costs—One of the tough requirements running through the nine sections calls for full repayment to the federal Treasury of reimbursable costs that will run heavier than they do now. Repayments, as usual, must include interest, with the single exception of costs to develop farm lands by reclamation, for which interest is waived by law. Repayment periods are limited in general to 50 years, except for reclamation facilities, which may be allowed 60.

In determining primary power benefits, the new rules direct the agencies to use the cost of construction by other groups—public or private—to supply the same power needs. If that cost runs higher than power users could pay, the agencies must use a lower figure—the cost that feasible power charges could support.

Agencies must report the cost of including power facilities in the project as compared with the cost of obtaining power from another source. Further, the cost estimates for the two possibilities must show taxes and interest charges on a comparable basis.

• Navigation and flood control—For navigation projects, the new rules draw a tight line on savings that can be used in computing primary benefits. They are limited to the difference in cost for moving traffic by the proposed waterway as compared with the cost of land transport for the traffic that now moves by land; the cost of water transport for traffic that uses the existing waterway; and the value of transportation service that the proposed waterway improvement would bring into being. Agencies, furthermore, are to figure actual transportation costs so far as possible and not rely on freight rates charged shippers, which often differ greatly from actual costs.

Flood control standards are tightened, too. The new regulations, like the old ones, require the federal agency to report: (1) All methods of controlling floods in the area to be protected, and (2) the lowest-cost method or combination of methods for reducing flood damage. Seven methods are specifically listed for study.

When local measures are necessary to carry out the best plan, the agency is to say what the federal government should do to help local people get their part of the job done.

The new rules, too, say definitely that local beneficiaries of flood-control projects, shall pay 50% of the costs attributable to them, both for local protection works and for dams.

Modular Measure

Meeting says technique is simple way to erect buildings easily, quickly

Frederick S. Merritt
Associate Editor

At the invitation of the Building Research Advisory Board, about 250 architects, contractors and building materials producers gathered in Washington, D. C., last week to sing the praises of modular coordination—a simple way of making buildings go together more easily.

Only a few discordant notes were sounded at the conference. Architects' prejudices and producers' slowness in converting to modular sizes, some speakers claimed, are holding up progress.

"Prejudice," said one, "is being down on what you are not up on."

Modular coordination requires building components to be made so that they can be fitted together with each other and with different materials or equipment without the necessity of cutting on the job. To achieve this objective, building components must be standard size, three-dimensional units or modules.

American Standards Assn. Standard A62 sets up a 4-in. cube as the module. In accordance with this concept, a modular brick might be composed of two modules (8x4x4 in. nominally), its actual dimensions being shorter than the nominal dimensions by the width of a typical mortar joint. So when modular bricks are laid up in a wall, bricks plus joints always form complete modules. If doors and windows also are modular sizes, the masonry should not have to be cut to fit around the openings.

• **Testimonials**—Said John Magney, of Magney, Tulser & Setter, Minneapolis architects: "If architects would use the system, their clients would get a building that is designed better, detailed better and built better at a lower construction cost. . . . Our chief draftsman insists that our drafting costs are nearly 15% less than they used to be."

The contractors' viewpoint was well expressed by J. P. Caldwell, chief engineer, J. A. Jones Construction Co., Charlotte, N. C., and J. E. Coombs, Baker & Coombs, Inc., Morgantown, W. Va.

Said Mr. Coombs: "Modular measure does for the construction industry the job of standardization that has proved so fruitful in production methods and cost analysis for the automobile industry and most other mass-production American industries."

To which Mr. Caldwell added: "The claims for savings made by leading exponents of modular coordination are not exaggerated."

A producer's opinion was voiced by C. K. Paine, Curtiss Companies, Inc., Clinton, Iowa, manufacturer of stock woodwork: "The program has gone far toward eliminating a traditional handicap to the industry of the many window opening sizes which had been common for a century or more."

He said modular measure had made it possible to reduce the number of listed sizes of windows from 1,406 to 659 and of sash from 1,710 to 797.

Labor Leaders

Dale, Bateman convicted of attempted extortion

Evan R. Dale and James Bateman, southern Illinois labor leaders, were convicted in United States District Court at East St. Louis last week of an attempt to extort more than $1 million from a contractor building the Joppa (Ill.) steam generating plant.

The contractor was Ebasco Services Inc., of New York which was forced to surrender its contract to build the huge atomic energy installation in July 1953, after a multiplicity of work stoppages—more than 40 in 1951, 1952 and 1953, had delayed and hampered the work.

Bechtel Corp. of San Francisco replaced Ebasco as prime contractor and the $197-million plant is expected to go into full production early next year, supplying electric power to the Atomic Energy Commission's mammoth plant at Paducah, Ky. The cost of the Joppa facility, authorized by Congress in 1950, will be about $58 million above original estimates.

Dale, president of the Southern Illinois District Council of the AFL Hod Carriers and Common Laborers' Union, also was found guilty of extorting a $7,500 payoff from Maxon Construction Co. of Dayton, Ohio in 1951-52. The Dayton concern was building a loading dock and other facilities at Joppa.

He and Bateman, business agent of a Murphysboro (Ill.) local of the AFL Pipefitters Union, were convicted on two counts in the Ebasco extortion attempt. One count charged them jointly with interfering with interstate commerce and the other with entering into a conspiracy to make the demand.

The maximum penalty on each count of the indictment is 20 years in prison and a fine of $10,000. Defense attorneys announced plans for appeal. Federal Judge Fred L. Wham set Dec. 21 as the date for sentencing.

Fluoridation Boom

Rapid increase in its use expected to follow new Supreme Court decision

Fluoridation of city water supplies can be expected to increase rapidly now that the U. S. Supreme Court has cleared the last major obstacle to the program.

The court last week ruled against opponents of fluoridation of the Shreveport, La., water system. It's possible for the issue to be raised on a different count from some other quarter, but proponents of fluoridation are confident the battle has been won.

Ever since the Public Health Service in 1951 approved of fluoridation as a means of helping to prevent tooth decay, more and more cities across the country have installed a fluoridation system. Yet many city administrations have been waiting for the court test before going ahead; now they've got the green light.

The court officially decided in its brief order not to hear a case brought by several residents of Shreveport, La. The court said no substantial federal question was involved. The Supreme Court decision leaves standing a Louisiana State Supreme Court decision, upholding the Shreveport City Council's fluoridation program.

The case was started by Shreveport residents to get an injunction to prevent the city council from buying equipment to insert inorganic sodium fluoride into the city's public water supply. The trial that resulted turned into a pro and con on the merits of fluoridation—whether or not it is still too "experimental."

Opponents claimed that while the evidence showed fluoridation reduced dental caries in children, no clinical test had been made showing its effects on the aged, the sick, or pregnant women.

The trial court said it was up to the "scientists and the lapse of time" to settle this controversy. But the judge decided the legal question in favor of the protesting citizens, holding that the city had no authority to fluoridate public water under its power to acquire and operate a city water supply.

The judge said prevention of dental caries is a matter "strictly within the realm of personal health, within which each person should be free to choose his course for himself."

On appeal, however, the State Supreme Court reversed the trial court. The U. S. Supreme Court's refusal to take the appeal leaves standing the Louisiana ruling that state or municipal control measures are justified.

Columbia Compact

Accord for development of Columbia River meets criticism during hearings

The proposed interstate compact for development of the Columbia River met with objections from public power groups at public hearings in Seattle and Portland, Ore.

The objections, as voiced by Ken Billington of the Washington Assn. of Public Utility Districts and the Pacific Northwest Public Power Assn., concern the allocation of power and the voting rights proposed for the various states.

Billington said Idaho, Montana, Wyoming, Utah and Nevada would get a disproportionate share of the power produced at hydroelectric plants and also would be able to outvote Washington and Oregon in any conflict.

The proposed compact gives Washington, Oregon, Idaho and Montana two votes each with one vote each for Wyoming, Utah and Nevada (ENR Nov. 18, p. 25). In future projects, the upstream states would be entitled to all power produced at the site and part of the added firm power that would be developed at downstream plants.

Billington pointed out that the upstream states of Idaho, Montana, Wyoming, Utah and Nevada would have seven votes as against Washington's two, although Washington's population exceeds that of the five states. He called for an agency that "would build dams" rather than serve as another advisory group.

Frank A. Banks, federal representative on the commission, called to Billington's attention another provision in the proposed compact which requires eight affirmative votes for any action. This would prevent the upstream states from "ganging up" on Washington and Oregon, he said.

State's 10-Year Road Needs Estimated at $610 Million

Consulting engineers have recommended that North Carolina spend $610 million during the next 10 years to modernize the state's highway system.

The recommendation was contained in a report by Parsons, Brinckerhoff, Hall and Macdonald of New York. The firm was retained by the North Carolina Highway Commission to recommend a long-range highway improvement program.

The report said about 11,500 mi of the state's highway system is inadequate for present or estimated future traffic. It recommended improving or rebuilding 10,202 mi of the primary system, adding 1,310 mi of new construction, widening 321 structures, replacing 753 structures and constructing 740 additional structures.

The major part of the work, the report said, should be done during the next six years. If the program were carried out by borrowing, a total of $153 million would be needed, according to the report.

But during the last half of the next decade, the report predicted highway revenues will exceed costs and enable the state to repay most of the amount borrowed. Over the 10-year period, the engineers estimated that highway revenues would lack only $22.5 million of paying for the modernization program plus the cost of highway maintenance.

The report said North Carolina might increase the funds available for highway construction by requiring counties to pay at least half the cost of further road construction, by eliminating gas tax refunds to persons who buy gasoline for non-highway use, by boosting the tax on diesel fuels, by increasing registration fees of private truckers to the level paid by contract truckers and by raising the levies established for large trucks that have registrations from out of the state.

Both Asphalt and Concrete Will Pave Kansas Turnpike

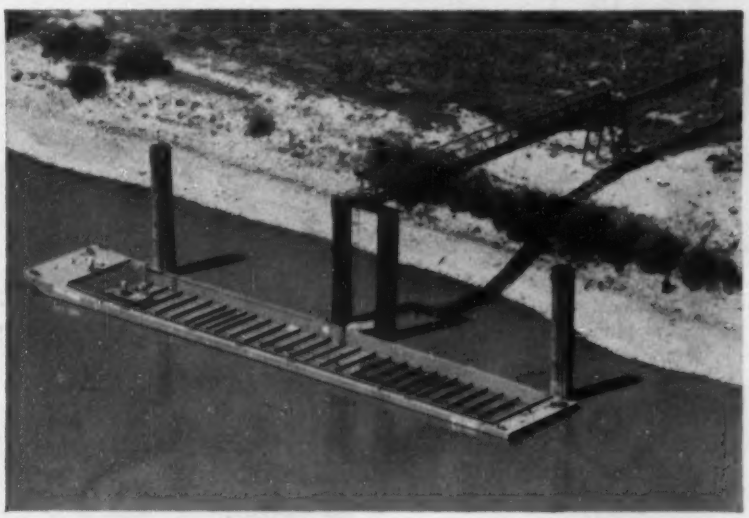
The Kansas Turnpike Authority has decided to use both concrete and asphalt paving on the state's 236-mi toll highway.

The Authority said reinforced concrete would be used from the Kansas City, Kans., terminus along a 55-mi stretch to the interchange south of Topeka. Paving from Topeka southwestward to the Oklahoma line—a distance of 181 mi—will be heavy duty asphaltic concrete.

The decision was made after receipt of engineering reports which said both materials were equally adapted to Kansas weather and soil conditions. Allen Hodnett, a member of the Authority, said accessibility of materials along the route was a governing factor.

The Authority announced that contracts will be let Dec. 24 at Lawrence for the sub-structure and piers for the turnpike's $2.5 million bridge over the Kaw River, northwest of Lawrence. The announcement said bids will be received about Jan. 1 for grading of one 17-mi stretch and that grading contracts will be let on a regular basis thereafter.

The Authority expects to have all grading work under contract by next June. All paving contracts will be awarded by mid-summer.



River Terminal of New Design

Stauffer Chemical Co.'s new marine facilities at Wood River, Ill., combine structural stability with modest cost. The installation will accommodate two barges under all river conditions. The riverward approach span rests on two pile clusters of 19 timber piles each. Each pile was driven separately to a penetration of 30 ft. Then the clusters were cut off level and capped with a ¾-in. steel plate. The mooring pile clusters consist of 19 piles each, driven to a penetration of 25 ft. All pile clusters are bound at four elevations to compel piles in each cluster to act as a unit. The 125-ft bridge span is a through-box truss of approximately 8x6 ft clear inside dimensions. All landward bridge supports are carried on 15-in. drill-in-place reinforced concrete piles which were covered to a depth of 15 ft and belled at the bottom.

Builders Protest

N. Y. Thruway contract with overtime provision seen as economic threat

New York State building contractors this week were pushing strong protests against what they called an attack by the state on its own wage-hour laws and what they saw as a serious economic threat to their business.

Crux of the trouble was a contract on the New York Thruway—up for bids Dec. 23—that provided a special dispensation to permit overtime work in order to complete the job within contract dates.

The job is a 4,000-ft approach to a high-level bridge near Buffalo to provide an interchange between the main Thruway and its Niagara Thruway spur. Engineer estimates for the work are said to be $7.5 million.

According to Daniel B. Niederlander, president of the John W. Copper Co. of Buffalo and president of the state Building Industry Employers' Assn., the contract calls for the work to be completed by October 1956. And printed as part of the call for bids is an application form to the State Labor Department asking for permission to include overtime work up to 60 hours a week.

Typed into the application form are the reasons: "Necessary to relieve congestion on adjacent routes. Labor shortage in area."

• **Politics and economics**—Similar provisions for overtime work, Niederlander told delegates to the BIE's annual convention, have been included in contracts for gas stations and restaurants along the 400-mi Thruway route.

Comments from the floor at several sessions of the convention made it apparent that the state had hit a sore point for local contractors who are feeling the pinch of a labor shortage in the area.

Many speakers from the floor pointed out that the state's rush to get the Thruway built and operating has created the labor shortages mentioned—and that the provision for overtime pay also contributes heavily to local shortages.

They pointed out further that the high pay available for men working on Thruway sections leaves local contractors to face ever-growing demands from building labor, after the Thruway work has moved on.

Some charged bitterly that the only reason for the rush on the road job was the desire to complete so much of the superhighway before the Republican administration goes out of office in January.

• **Not clear**—There was some dispute as to the exact meaning of the overtime provision.

In the association meeting, Niederlander said that the contract terms as stated would mean, in effect, 80 hours pay for 60 hours work in the Buffalo area—which would put common labor pay at a maximum of $184 a week, skilled mechanics at a top of $275 a week.

However, a further examination of the contract shows the wording "overtime rate of pay . . . shall be commensurate with premium wages prevailing in the area."

Legal experts pointed out that the rate for highway work, state-wide, is time-and-a-half for overtime; for building construction, double-time.

• **Protests**—In either case, however, the contractors approved unanimously a resolution to the various state departments protesting the provisions in this contract and the application of the "emergency" classification to the Thruway as a whole.

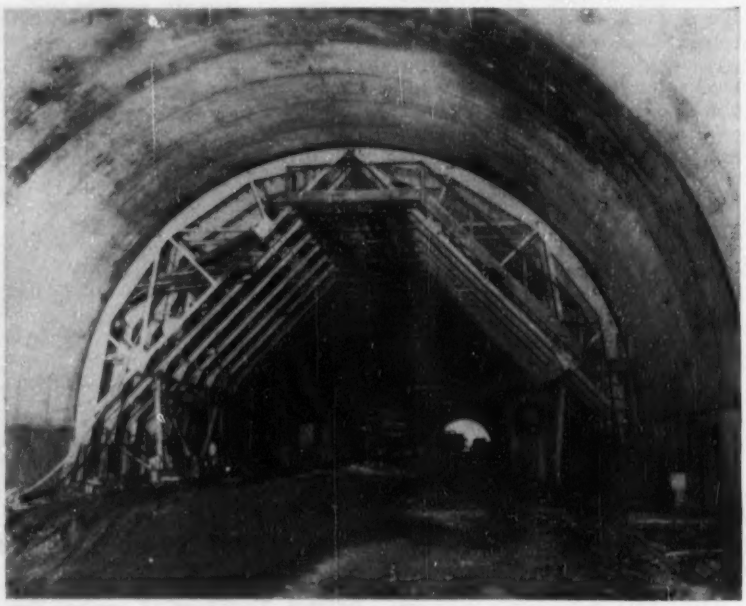
State sources, pending receipt of the resolution, offered no comment, except that Thruway officials made the point that the sooner the road is built and in operation, the sooner it will collect tolls and begin to pay off its obligations—thus making a potential saving for taxpayers.

Jobs in the News

INDUSTRIAL DEVELOPMENT—John M. Stahl, Beverly Hills, Calif., will construct an $18-million industrial development, consisting of 28 buildings, in Santa Monica, Calif. Jack H. MacDonald, Inc., Los Angeles, is contractor. C[illegible]ay Parsons, Los Angeles, is arch[illegible]d engineer. Construction of the first six buildings will commence early next year.

TUNNEL APPROACH—Gull Contracting Co., Flushing, N. Y., has been awarded the first contract for the east side tunnel approach to the third tube of the Lincoln Tunnel, scheduled for completion in 1957 (ENR Oct. 22, 1953, p. 26). Estimated cost of the street improvement project, which includes six underpasses and a 600-ft tunnel, is $8.1 million. This brings to $55 million the amount committed for construction of the $100-million tube.

EXPOSITION BUILDINGS—Virginia Engineering Co., Newport News, Va., has received a $5-million contract for construction of the first phase of the Kentucky State Fair and Exposition buildings. Contract awards for the building program, supervised by Kentucky State Property and Building Commission, exceed $9 million.

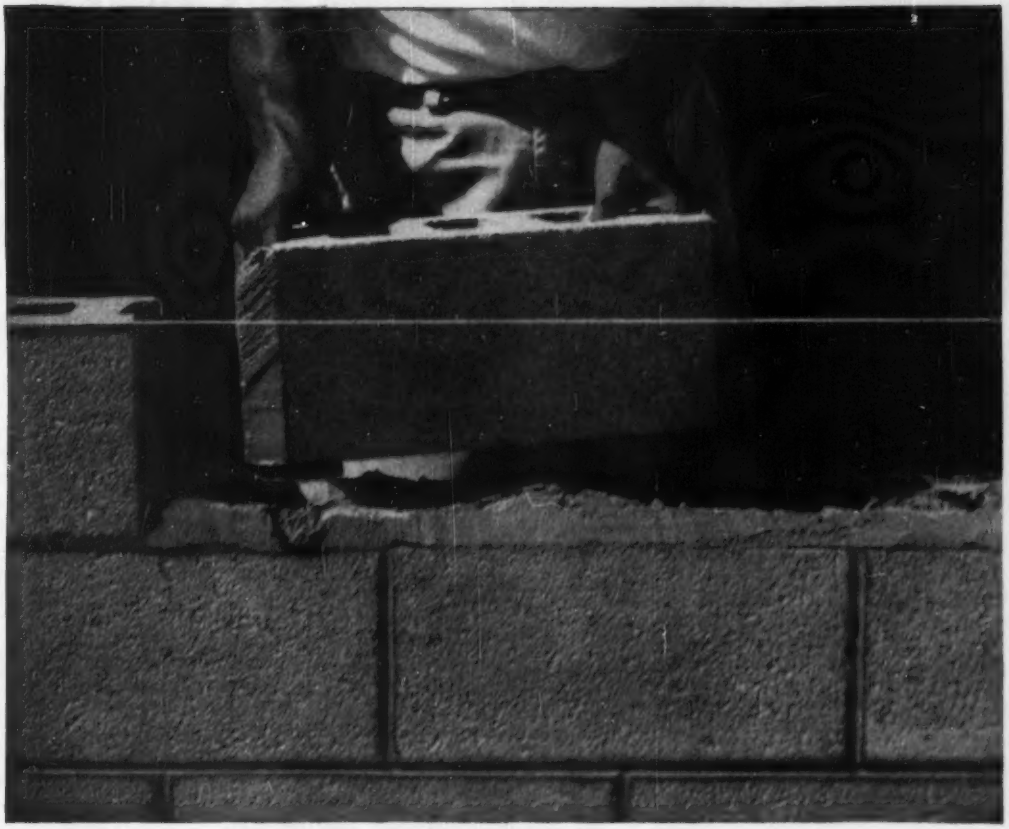


New Waldo Tunnel Is Nearly Complete

This set of traveling steel forms to line the Waldo Tunnel in San Francisco is among the widest ever built. The forms measure 46.5 ft wide and 28.7 ft high. The new tunnel will parallel the old Waldo Tunnel and accommodate three lanes of northbound traffic on Route 101. The old tunnel will carry southbound traffic. Guy F. Atkinson Co., San Francisco, is contractor. The tunnel forms were designed and fabricated by Blaw-Knox Co., Pittsburgh.

BRIXMENT

Better Mortar for Blocks



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CITY BY CITY

25 Years in the Future

New York City—For some time the Metropolitan Transit Commission has been troubled about the trend toward curtailment and abandonment of commuter train service because of financial losses to railroads. As a result, the joint New York-New Jersey agency is seeking $750,000 to $1 million in state aid for a study of long-range transit needs of the metropolitan area.

The commission believes that the comprehensive study—by looking ahead 25 years—would supply pressure against hasty or panicky abandoning of existing traffic facilities.

As an example of the type of study proposed, the commission points to a $650,000 one in progress in the San Francisco Bay area. It is being backed by a $400,000 state appropriation and funds from the counties concerned.

Five-Year Plan

Chicago — Chicago's Engineering Board of Review has approved a five-year plan calling for $269.1 million worth of public improvements. Projects totaling $64 million are scheduled for 1955.

Under the plan $88 million will go toward construction of the Calumet Skyway Toll Road, which will link with the Indiana Turnpike at the state boundary. The project also includes completion of the Congress Expressway, 19 bridges, 289 mi of streets, two new sewer systems, eight grade separations, resurfacing of 234 streets.

Full Speed Ahead

San Francisco—Now that the constitutionality of the California community redevelopment law has been established, the San Francisco Development Agency is going ahead with plans for both its $6-million Diamond Heights and $24-million Western Addition projects.

The last legal barrier was cleared away two weeks ago when the Supreme Court refused to review the constitutionality of the proposed Diamond Heights project (ENR Dec. 9, p. 19). The agency officials—to bring about a test suit—refused to sign a request for the project on the grounds that it was not a blighted area. Both the State District Court of Appeal and the State Supreme Court ruled against the agency.

The agency, which has been almost inactive for two years, predicts that it may be able to start securing property for the Diamond Heights project by spring or early summer, and for the Western Addition project by late summer or early fall.

Plans call for clearing and redeveloping about 28 blocks of slums in the Western Addition project. The Diamond Heights project will convert a 325-acre sparsely settled area to a residential community housing 2,300 families in new homes and apartments.

Industrial Inducement

Seattle—In Seattle, where industrial sites are at premium, a new engineering report recommends a $15.2-million development of the Dumwamish and lower Green River Valley area south of the city.

The New York City engineering firm of Knappen-Tippetts-Abbett-McCarthy recommends that the river channel be dredged for navigational purposes at a cost of $8.7 million. This work would allow barges to go upstream from Puget Sound. The rest of the money would be used for roads, utilities and railroad trackage.

The area—some 3,800 acres—is of little industrial value at present because of recurring floods. But the proposed Eagle Gorge Dam, now under consideration by the Corps of Engineers, would eliminate this threat.

Stirred to Action

Coronado, Calif.—A strong movement for construction of a $20-million vehicular traffic tube under San Diego Bay has been revived by a recent strike that halted ferry service between San Diego and Coronado.

The Coronado City Council has voted to hold an election within 60 days to determine whether residents are in favor of the project. In 1952, an advisory election resulted in a small majority against the plan.

During the strike Coronado residents had to drive 20 mi around the bay to get to San Diego, which is less than a mile away via the ferry. Traffic jams on the two-lane road reportedly convinced many of the residents that such a tube should be built to permit fast evacuation in an emergency.

Tudor Engineering Co., reporting in 1951 on the proposed tube, found the project feasible as a revenue bond proposition. According to this company, a two-lane tube with approaches and connections would cost $21.8 million and require a $28-million bond issue to finance.

(*City by City continued on page 32*)

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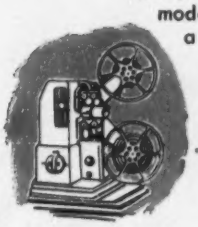

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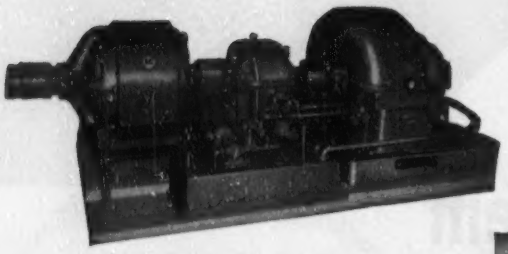

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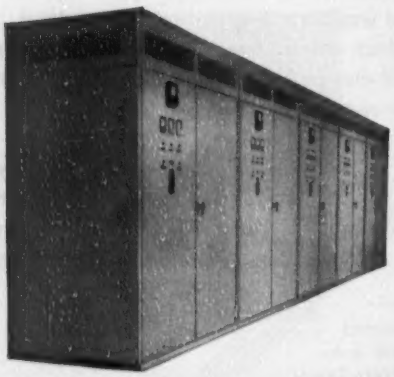
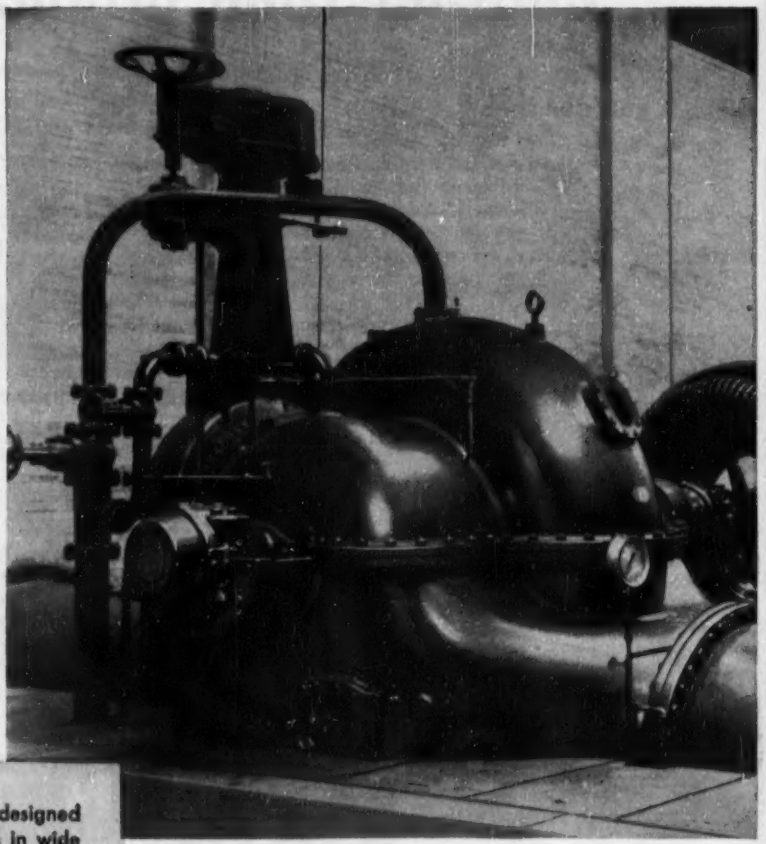


MOTOR CONTROLS: Dependable start-stop control for all sewage processing apparatus, in both single and grouped units. Simplified installation requires only connection to leads for operation. Expandable design permits easy addition of more cubicles when required.



TYPE "S" SEWAGE PUMPS: Specially designed pumps engineered to individual requirements in wide range of capacities and heads. Extremely adaptable to large city sewage requirements. Can be furnished for either vertical or horizontal installation where needed.

Illustration shows seven large Type "S" Sewage Pumps installed in large midwest city sewage pumping station.

ALLIS-

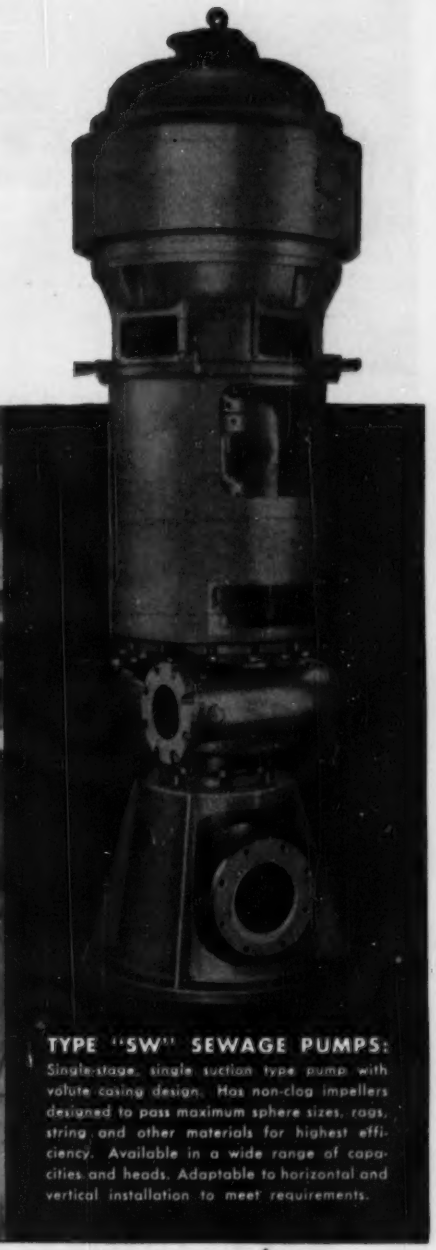
GROWING PAINS

Backed by over 65 years of research, design, engineering and manufacturing experience, Allis-Chalmers sewage pumps give long, heavy duty service under every operating condition. Their sturdy design and low maintenance characteristics are the ultimate in modern sewage pump construction.

As the world's largest manufacturer of public works equipment, Allis-Chalmers also offers an extensive line of motors, blowers, motor controls and allied equipment for modern sewage plant operation.

Whether you are planning expansion or modernization of your present sewage facilities, you can profit from Allis-Chalmers long experience in this field. For complete information call your nearest A-C sales office or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4259



TYPE "SW" SEWAGE PUMPS: Single-stage, single suction type pump with volute casing design. Has non-clog impellers designed to pass maximum sphere sizes, rags, string and other materials for highest efficiency. Available in a wide range of capacities and heads. Adaptable to horizontal and vertical installation to meet requirements.

World's Largest Manufacturer of Public Works Equipment

CHALMERS

A-C ALLIS-CHALMERS

One of the compact, odor-free, Duo-equipped waste treatment plants on the Pennsylvania Turnpike.

Big Things NOW COME IN SMALL PACKAGES

No longer need waste treatment be a major problem to small towns and other municipal and industrial sources of pollution with population equivalents up to 5000. Now Dorr Duo units bring "big city" treatment facilities down to a realistic investment cost. How? By an ingenious design that allows a single unit to perform a dual purpose.

Here's a good example. A high degree of treatment is required at the various restaurant and service areas on the Pennsylvania Turnpike. One Dorr Duo Clarigester and one Dorr Duo Filter are installed at each of four stations to provide the identical degree of treatment that would normally have required five separate units. Installation and operating costs are lowered, space requirements are reduced, and operational headaches are practically eliminated.

Whenever a process involves the separation of finely divided solids in suspension, the use of ion-exchange or fluidizing techniques, Dorr and its Associated Companies throughout the world can provide the correct equipment for the job.

Clarigester is a trade mark of The Dorr Company, Reg. U. S. Pat. Off.

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Offices, Associated Companies or Representatives in principal cities of the world.

CITY BY CITY

Expressway Agreement

Des Moines, Iowa—For nearly 15 years an extension of Ingersoll Ave. across the Des Moines business district has been under discussion. Last week both city officials and the Iowa Highway Commission approved a basic plan for a two-mile expressway expected to cost $12.9 million.

The long-range plan—one of four considered—calls for a four and six-lane expressway. Six lanes would run from the west end of the Ingersoll extension at Twenty-First St. to near Tenth St., where a one-mile elevated structure would begin. The elevated portion would be four-lane, widening to six lanes across a bridge over the Des Moines River. The bridge would extend from about Third St. to East Fifth St.

One of the primary advantages of the accepted plan over three alternatives is that it can be built in three stages: The section running from Twenty-First to Tenth St., the river bridge, and the elevated section between Tenth and the bridge. Another advantage of this plan is the greater traffic capacity—some 40,000 vehicles daily at the outset with provisions for future traffic increase.

Since 1951 the city has purchased some $366,000 worth of property for the extension right-of-way. And last March the Highway Commission hired Howard, Tammen, Needles & Bergendoff, a Kansas City, Mo., firm, to make the engineering studies. But actual construction is expected to require a combination of federal, state and city funds.

Power Plant Plan

Phoenix, Ariz.—Since 1950 the Salt River Power District has been adding an average of 5,000 customers a year. This steady growth in electricity demand has prompted plans for construction of a steam generating plant. The new power plant will cost $13 million and will be designed to develop 100,000 kw.

The new facility, which will occupy some 7,500 sq ft of space, will be built to permit addition of a second 100,000-kw unit. Its overall design will incorporate the out-door type construction that is particularly applicable to the moderate climate of the Phoenix area.

Construction of the new plant is expected to start next August, while the completion date has been set for spring 1957. An engineering study is now in progress to determine the site for the plant.

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"OK! SO I AM PIG-HEADED! I gave up trying other ropes years ago. It pays me to standardize on Roebling. Why? Well, with Roebling I get exactly the type of rope I need, when and where I need it . . . no makeshifts . . . no delays . . . and the performance is tops."

* * *

Why not find out for yourself? Call your nearest Roebling office or distributor for a Field Man. He'll recommend the ropes that perform and stand up best in the excavating and construction fields. And you'll learn what service really means!

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Subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J.

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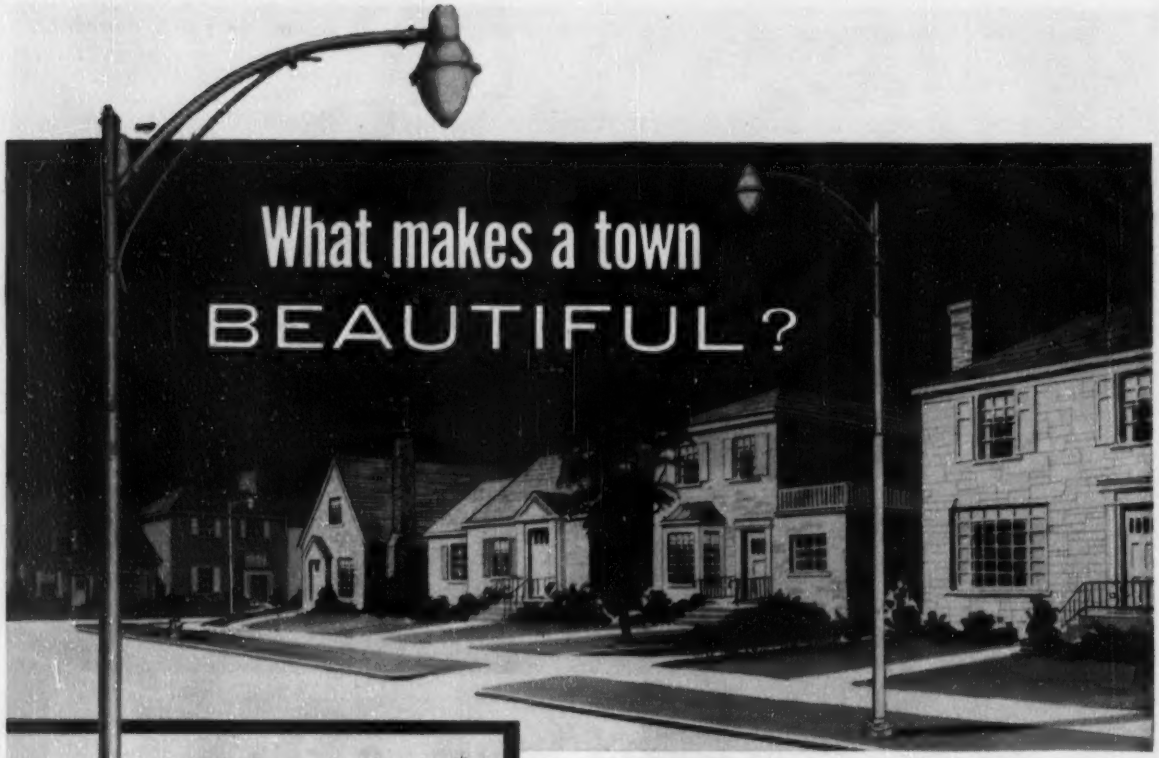

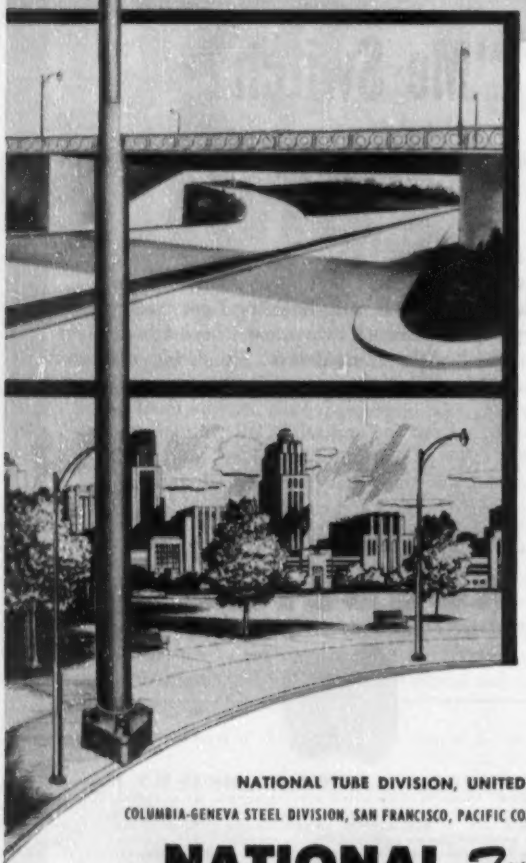

• Wide, smooth streets lined with handsome houses; neat green lawns; civic parks dotted with shade trees; multi-lane boulevards, as swiftly efficient as they are scenic—all of these things help make a town beautiful. Why, then, should anything detract from such carefully planned beauty? Why should any progressive, modern town have old-fashioned, bulky poles lining its streets?

USS NATIONAL Tubular Steel Poles are slender and graceful—a true combination of beauty and function. Their slimness keeps them from being visual obstructions—traffic hazards. As lighting poles they are unexcelled. When used for trolley wires, their strength easily supports the tightest lines, even though steel poles need not be spaced nearly as close together as the old-fashioned standards. And steel poles require practically no maintenance—an occasional coat of paint at most.

With NATIONAL Tubular Steel Poles, beauty and economy go hand in hand. Why not let them serve *your* community? For further details, write to National Tube Division, United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa. Ask for Bulletin No. 14.

USS

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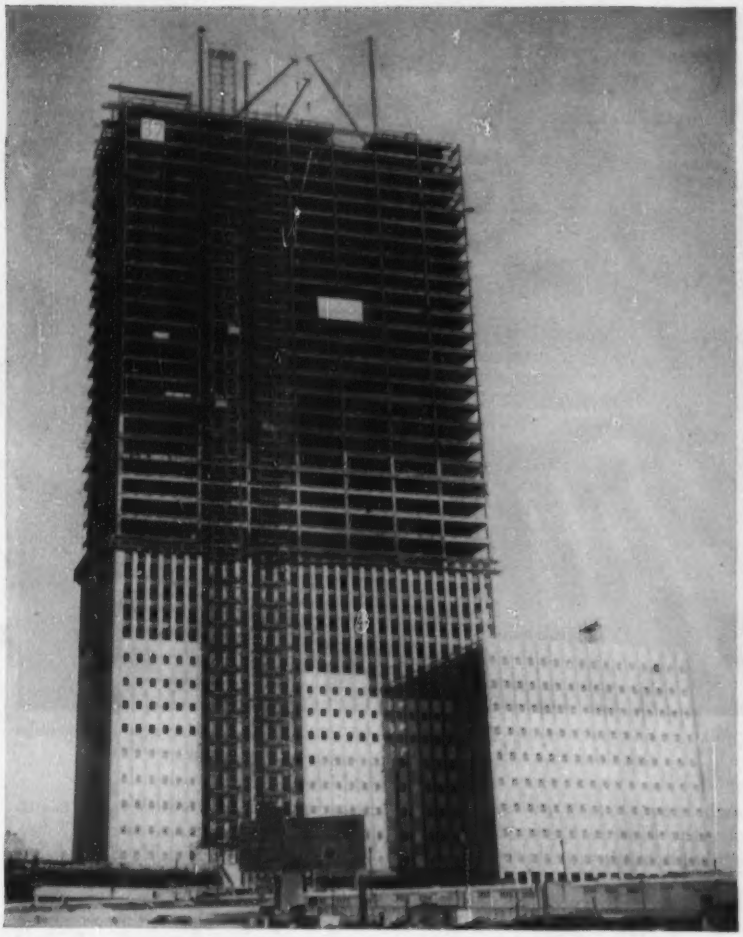
NATIONAL *Tubular* STEEL POLES

UNITED STATES STEEL



Chicago's Tallest and Finest

Insurance headquarters has fastest elevators, "personal" air conditioning, pneumatically sealed aluminum windows

For the past 13 months a 32,420-ton steel-frame giant has been steadily growing in the Windy City at Randolph St. just east of Michigan Ave. It's the framework of Chicago's tallest and finest office building—the Mid-America Home Office of the Prudential Insurance Company of America.

On Nov. 16 the 13-month old giant attained its full height when the first column of the top floor was hoisted into place. This 27-ft column, extending from the 40th floor mezzanine to the roof line above the 41st floor, carried a huge American flag signalizing that the skyscraper was being topped out (ENR Nov. 18, p. 22).

Only a few days later the last piece of structural steel was hoisted into place, bolted and driftpinned, and then riveted.

• **First in 20 Years**—Prudential's new building—the first major skyscraper built in Chicago in the past two decades—wins the accolade for being Chicago's tallest, with nearly 50 ft to spare. Its roof height will be 601 ft above Chicago Datum. The next tallest is the 557-ft Pittsfield building, with the Civic Opera running a close third at 555 ft. A 325-ft steel tower and television antenna is to be erected on top of the new Prudential building.

The 41-story skyscraper, including its 10-story wing to the east, will contain roughly 1,000,000 sq ft of rentable office space. Of this area, Prudential will occupy from 275,000 to 300,000 sq ft, according to James E. Rutherford, vice president in charge of the Mid-American Home Office.

Prudential's Mid-America Home Office, staffed by 1,500 employes will occupy the fourth through the ninth floors, and part of the second. The balance of space will be leased to tenants, with initial occupancy scheduled for December, 1955.

Floors 3 through 10 will furnish over 40,000 sq ft of rentable area each. Floors 11 through 38 will provide from 18,000 to 20,000 sq ft each, and 39 through 41 about 8,000 sq ft each. Under ideal weather conditions four states—Illinois, Indiana, Wisconsin and Michigan—will be visible from the 41st floor which will be a glass-enclosed observation deck.

• **Special features**—As would be expected in an undertaking of this magnitude, there are a number of special features designed to provide the ultimate in attractive, comfortable and efficient working conditions. To mention a few:

The building will be 100% air-conditioned the year around, with special provisions for personal control in individual offices. Total cooling capacity of the system will be the equivalent of 6,000,000 lb of ice melting daily. And the system will furnish six complete changes of air per hour. Recessed fluorescent lighting in most areas will maintain a minimum intensity of 40 ft-c at desk level. Intensities up to 100 ft-c, however, can be maintained where desired.

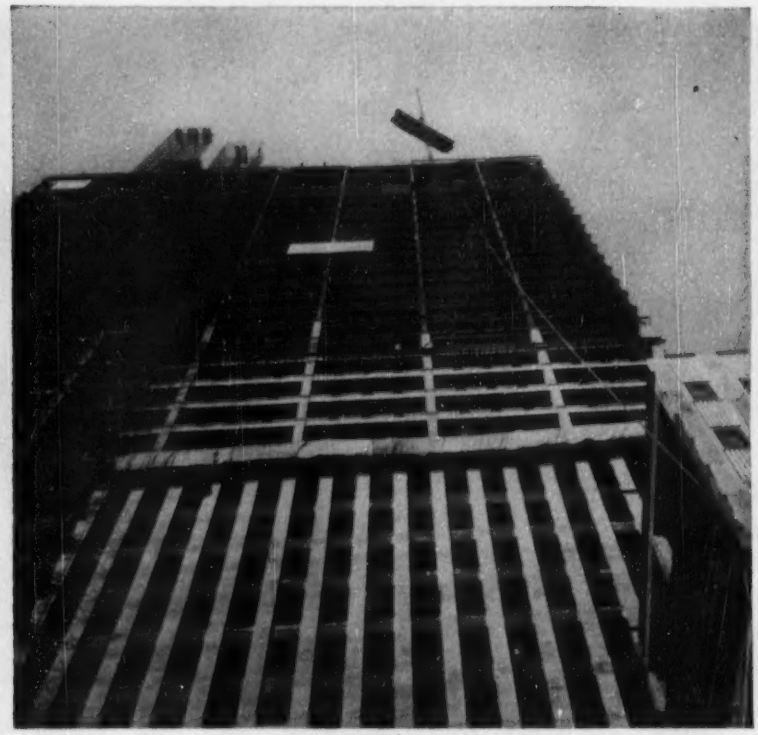
Occupants of the building will have great latitude in arranging their office space. Permanent walls on each floor will enclose the central core, containing elevators and utilities. But all other interior wall locations will be made to suit the tenants.

Exterior walls will be strips of Indiana limestone on brick backing, alternating with a combination of aluminum spandrels on concrete block backing and aluminum frame windows. The first floor will be faced with silver-white granite.

• **Pivoted windows**—There are 2,617 aluminum-frame, double-glazed windows, with ½-in. separation between inner and outer panes. They are mounted to pivot 360 deg about a vertical axis, permitting both sides to be washed from the inside. Otherwise, they serve as fixed windows, with an inflatable rubber gasket acting as a weather-stripping seal between the rotating and fixed frames.

A window-washer's key deflates the rubber seal, permitting the window to be rotated for washing. Then the window is locked tight by inflating the seal with a portable compressor. A similar window was used for the Alcoa building in Pittsburgh (ENR April 3, 1952, p. 67).

(*Continued on page 36*)



HARD-HATTED BRIDGEMAN at ground level keeps snug hold on one of two tag lines (at left) that prevent big bundle of cellular flooring from rotating as it is hoisted (at right) to the 39th floor.

• **Cellular flooring**—Floors below the third floor level and in the service areas above, are reinforced concrete construction. The remainder of the floors, some 880,000 sq ft in all, are made up of cellular steel flooring, topped with 2½ in. of lightweight concrete, which is reinforced against shrinkage and temperature stresses with welded wire fabric. The cells in the steel flooring serve as raceways for electric power and telephone outlets.

Floor-to-ceiling heights are about 4 ft less than floor-to-floor heights. The plenum permits concealed installation of ventilation duct work, piping and recessed light fixtures. It also permits all structural floor members and their fireproofing to be hidden from view, resulting in a flat, unobstructed accoustic ceiling line. Floor-to-floor height from the 2nd through the 10th floor is 13 ft 7 in., with a 9 ft 4-in. ceiling height. From the 11th through the 37th these dimensions are 13 ft and 9 ft, respectively. They vary for other floors.

• **Record-speed elevators**—The latest in vertical transportation will be provided, acording to Prudential, by 12 moving electric stairs, 27 high-speed elevators and 3 freight elevators.

Three pair of moving electric stairs will serve the first four floors and two pair will furnish service between the 40th, 40th mezzanine and 41st floor. Single moving stairs also will connect with the Illinois Central Station at Randolph St.

Eight tower elevators serving the 28th to the 40th floors will have a top speed of 1,400 fpm (16 mph)—believed to be the fastest in the world.

No elevator operators will be needed. An extensive electronic system together with an electronic control center will vary the operation of the elevators according to various traffic patterns.

This central control will analyze the number of up and down calls, activate the proper number of cars, and control their travel to meet the prevailing conditions.

The floor of each car is a "scale" which weighs the passengers and closes the doors when a car has filled, even though the predetermined normal waiting interval has not elapsed. The car then runs express without stopping to pick up passengers until some riders are discharged at their destinations. On the other hand, even though it isn't filled to its capacity, a car will leave after the normal interval, answering all calls.

• **Caisson foundations**—Prudential's new building has its roots deeply embedded in Chicago's foundations. For it sits on 187 concrete caissons sunk 110 ft to bedrock. An additional 66 caissons support steel columns and framework that carry new viaducts surrounding the building.

These viaducts are: East Randolph Drive along the south side of the building; North Stetson Ave. along the east side; an extension of East Lake St. along the north side; and North Beubien Court, which is being built by the city, along the west side of the building.

Foundation construction was started Aug. 12, 1952. The 253 caissons were dug by open excavation using airspades, and the material being removed by bucket hoist. The caissons vary in diameter from 4 ft to 11 ft.

Cramped quarters due to the fact that the building straddles several tracks of the Illinois Central Railroad, presented the greatest single problem throughout the construction of the foundations, substructure and superstructure.

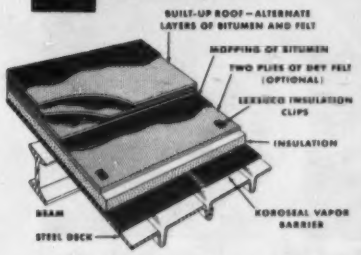
A total of 22,000 cu yd of concrete was needed to fill the caissons and 12,000 cu yd of reinforced concrete went into the construction of the basements. Although the caissons were all sunk between the various railroad tracks, it was quite a feat that no suburban train service had to be seriously curtailed, despite the fact that most of the tracks had to be relocated one or more times.

• **Topping-out sequence**—A great deal

(*Continued on page 38*)

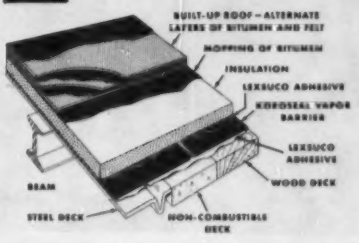
5 LEXSUCO ANSWERS FOR TODAY'S ROOFING PROBLEMS

1 **Over steel deck . . . Koroseal Vapor Barrier**



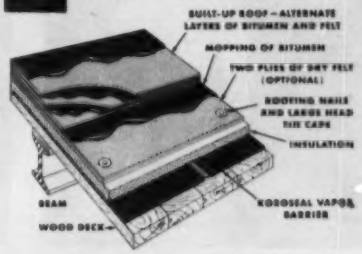
✓ *fire-retardant* ✓ *vapor-resistant*
✓ *uses self-locking Lexsuco Clips*

2 **Over steel, concrete or wood deck . . . Koroseal Vapor Barrier**



✓ *fire-retardant* ✓ *vapor-resistant*
✓ *uses fire-safe Lexsuco Adhesive*

3 **Over wood deck . . . Koroseal Vapor Barrier**


BUILT-UP ROOF – ALTERNATE LAYERS OF BITUMEN AND FELT
MOPPING OF BITUMEN
TWO PLIES OF DRY FELT (OPTIONAL)
ROOFING NAILS AND LARGE HEAD TIN CAPS
INSULATION
BEAM
WOOD DECK
KOROSEAL VAPOR BARRIER

✓ *fire-retardant* ✓ *vapor-resistant*
✓ *uses standard nails and tin caps*

Engineered products for the construction industry

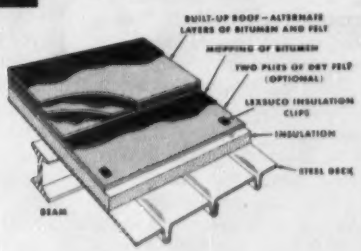
Modern requirements for built-up roofing demand improved fire resistance and greater vapor impermeability —and Lexsuco answers the problem with its new roof designs featuring Koroseal Vapor Barrier.

Lexsuco Roof Constructions are fire-retardant and vapor-resistant; can be applied over any type roof deck; utilize standard built-up roofing; can be specified with or without a vapor barrier; and provide superior roofing at no more cost than conventional roofing.

Koroseal Vapor Barrier is a tough, elastic sheet that gives excellent resistance to vapor transmission and will not contribute burnables to a plant fire below. Other Lexsuco innovations include Lexsuco Clips and Lexsuco Adhesive for high-strength, non-inflammable fastening of Koroseal and/or insulation to deck.

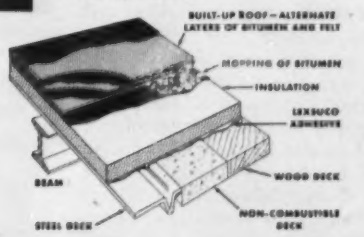
Analyze the five Lexsuco roof designs presented here . . . then specify "Lexsuco Roof Construction" for all your built-up roofing applications—it's yours at no extra cost.

4 **Over steel deck . . . no vapor barrier**



✓ *fire-retardant* ✓ *uses self-locking Lexsuco Clips*

5 **Over steel, concrete or wood deck . . . no vapor barrier**



✓ *fire-retardant* ✓ *uses fire-safe Lexsuco Adhesive*

For a new bulletin containing technical data and specifications on Lexsuco Roof Constructions, write: Lexsuco, Incorporated, 4817 Lexington Avenue, Cleveland 3, Ohio.

LEXSUCO
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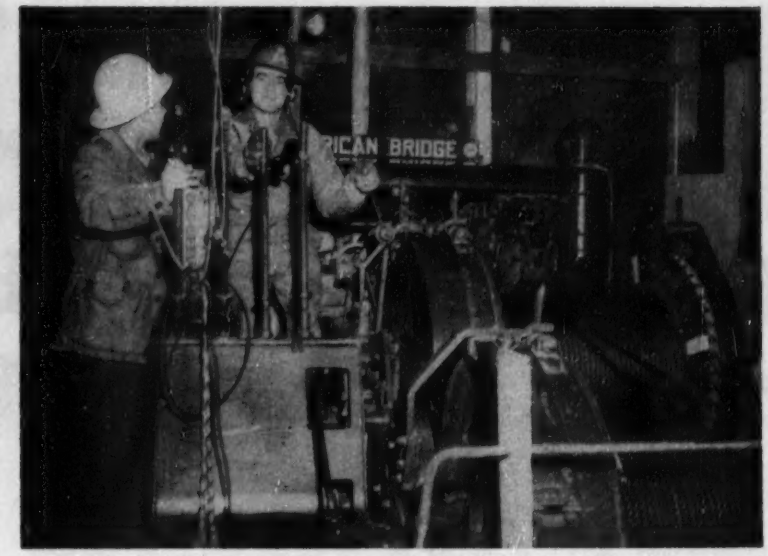


GROUND SIGNALMAN with painted four-vane paddle (at left) eases load of steel out of railroad car below by signaling to second signalman at erection floor level, who relays instructions by phone to hoisting engineer (at right), inside the building on ground floor.

of interest is always evidenced in the topping out of a tall skyscraper. For one thing, it symbolizes the successful completion of the structural frame. The topping out of this 41-story skyscraper was no exception.

Several thousand devoted sidewalk superintendents lined Michigan Ave. to watch proceedings, in addition, to a large group of civic officials, architects, engineers and contractor officials invited to witness the operations.

This is what they saw: A column extending 27 ft from the 40th floor to the roof of the 41st floor was selected to carry an American flag as it was hoisted into place.

Like the steel delivered for the lower stories it arrived at the site among a carload of structural steel, on one of two tracks leased by the contractor. The car was spotted at the southeast corner of the building, just east of and below Randolph St.

First operation was to pick up the column from the car and land it on the widened portion of Randolph St. The flag was attached to the top of the column and two outriggers were attached to the bottom. Tag lines attached to the ends of the outriggers kept the column from swaying or whirling as it was hoisted to the 40th floor mezzanine.

The column was hoisted by one of three guy derricks, operating near the southeast corner of the 40th floor mezzanine. When it got to the top it was transferred in mid-air to a second derrick which swung it into final position at the northwest corner. It was field-bolted and driftpinned between splice plates of the column below. And a pistol flare was fired, signaling to the crowd below that the 41-story skyscraper had been topped-out.

It was just about noon and the bridgemen, whose job it was to complete the erection of the two top floors and roof framing, took a 30-min break for lunch. Meanwhile, some two dozen photographers and reporters who had come on top to witness and record the topping out, descended, nine to a load, in one of the two 600-ft high tubular frame man-hoists attached to the skyscraper's framework.

• **Steel erection**—The first structural steel was erected on Nov. 11, 1953. Locomotive cranes and a 100-ft boom crawler crane with 30-ft jib set steel at basement and ground level. Five guy derricks, each with 100-ft mast and 90-ft boom, were needed up to the 10th floor. Above that, three derricks did the job.

WINDOWS PIVOT to permit easy washing of both sides from the inside, then rubber tube gasket (under workman's thumb) is inflated to lock them in fixed position and seal out noise and weather.

Over-all dimensions between outside column lines decreased as the building went up. They varied from 382 x 378-ft for the ground floor to 328 x 194 for the combined wing and tower section below the 10th floor, and 235 x 125 ft in the upper floors of the tower.

Each derrick was anchored by 8 guys, which meant that the 800 carloads of structural steel in the 41-story frame had to be scheduled for arrival when and as needed. Otherwise there would be confusion and a great deal of unnecessary booming up, down and out to miss the web of wire rope guys.

Steel from the fabricating plants in Gary, Ind. and Ambridge, Pa., arrived at the contractor's Kensington yards in south Chicago. It was sorted, reloaded and shipped to the erection site on two leased railroad tracks. Having only one point of delivery at the job meant that all steel had to be hoisted by one derrick, with the others helping erect it in place.

Hoisting the steel from railroad car to derrick floor followed the customary pattern. But just how it was done so smoothly, safely and efficiently never ceased to be a point of wonderment even to the experienced sidewalk superintendents.

• **Hoisting technique**—It took a 7-man crew to hoist the steel: Two to attach the hoisting sling to the load line, two signalmen, two men on the tag

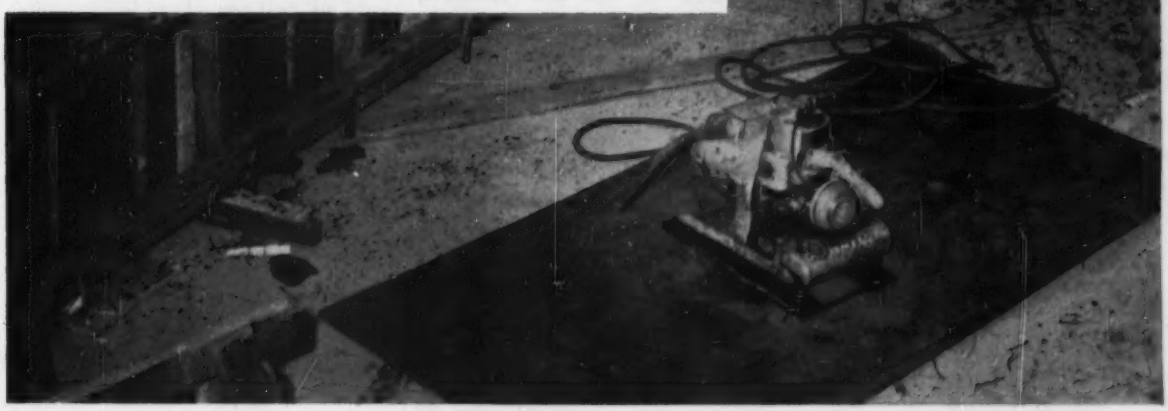
(*Continued on page 40*)

With Homelite Carryable Generators...

contractors are now operating cost-cutting, labor-saving, one man high cycle electric concrete vibrators. Note the absence of special staging normally required for both operator and gas-engine powered vibrators. The Homelite generator stays on the ground, out of the way of the actual pouring operation and is easily moved to any spot where needed. Homelite generators also provide power for money-saving electric drills, saws and flood-lights. For complete information, write

HOMELITE CORPORATION

1112 RIVERDALE AVENUE • PORT CHESTER, N. Y.



Stair treads by BLAW-KNOX

you can easily make

every step a safe step

Indoor or outdoor, you can rely on Blaw-Knox Stair Treads to provide the safety you want in your plant.

Designed for tremendous strength against impact, these stair treads are made with twisted cross bars and rolled diamond checkered plate nosing—as illustrated.

But, when desired, you can get treads with a twisted cross bar nosing or an abrasive nosing. And for specially slippery conditions we can supply you with serrated cross bar treads.

Just tell us what your application is and we'll offer our recommendations as to the best type of tread for your job.

Only Blaw-Knox Electroforged®
Steel Grating and Stair Treads
—have these five exclusive features:

1. rigid one-piece construction—easy to install
2. all surfaces accessible—easy to paint
3. no sharp corners to clog—self-cleaning
4. maximum open area—for light and ventilation
5. non-slip twisted crossbar—safe footing

A short note will bring you a copy of new Bulletin No. 2365-R —a dimensional sketch will bring you a quotation.

BLAW-KNOX

BLAW-KNOX COMPANY
2001 Farmers Bank Building • Pittsburgh 22, Pa.

BLAW-KNOX EQUIPMENT DIVISION
GRATING DEPARTMENT

GRATING APPLICATIONS: floors • platforms • walkways • catwalks • stair treads • fan guards • shelving • and many other uses, both outdoors and indoors, for versatile steel grating.

lines, and one hoisting engineer. Here's how they did it:

With a load of steel ready to go topside, a signalman at first floor level on Randolph St. directly above the railroad car flashed the proper signal to a second signalman at the derrick floor level above. This man, in turn, relayed instructions to the hoisting engineer by means of a continual and direct telephone-type connection between the two.

The hoisting engineer couldn't see either signalman. His diesel-powered two-drum hoist was located at ground level inside the building being erected. It was rigged with 2,300 ft of ¾-in. cable for the boom line and 1,600 ft of ¾-in. cable for the load line.

Bright yellow quadrant markings on the load line drum indicated to the hoisting engineer how fast he was raising or lowering a load.

A third, and most important feature, was a small red light hanging above the hoist in full view of the operator. Contrary to the normal conception that a red light means danger, this signal glowed red as long as telephone contact was maintained.

Should the system fail to function, the red light would be extinguished, and the hoisting engineer would stop all operations of the hoist.

These were standard safety precautions followed by all hoist and derrick crews on the job. But they were a significant part of the overall job-safety program which established enviable records, with no fatalities and few lost-time accidents.

Other safety precautions in prominent evidence throughout the job include: Well-lighted construction stairs; stairwells, elevator shafts and other interior floor openings enclosed with safety railing; masonry catwalk planked top and bottom and canvass enclosed on the outside to protect stone-setting crews from falling objects as well as those working below; safety screens along the outside of the exterior columns to catch falling objects; and hard-hats, of course.

• **Men in charge**—Roy W. Booth is project manager for George A. Fuller Co., general contractors on the project. Joe Kropacek is construction superintendent and C. C. Fresnus, mechanical superintendent.

G. W. Faulkner is project engineer for the American Bridge Division of U. S. Steel Corp., structural steel contractors on the job. G. W. Twining is superintendent of erection, and Fred A. Langston is his assistant.

Wm. Burdick is project engineer for Naess & Murphy, architects and engineers on the project. John Landwher is project engineer for Prudential Insurance Co.

THE TAILRACE TUNNEL of the Kilforsen plant is 43 ft wide and 48 ft high. It is unlined, generally, but the roof has been reinforced at some points.

Over 7 million yards of rock excavated for two power projects

Sweden's biggest underground installations are its hydro stations. Kilforsen and Stornorrfors plants set new records for rock rooms and tunnels.

[EDITOR'S NOTE—This is the third of four articles on underground construction in Sweden. The first two appeared in the Dec. 9 issue, p. 33, 37.]

Tore Nilsson
Civil Engineering Director
Swedish State Power Board
Stockholm, Sweden

The confidence of Swedish engineers in the economy of underground construction for hydroelectric plants is emphasized by the fact that the State Power Board—responsible for one-half of new power plants in Sweden—has chosen underground design for about 80% of the hydroelectric plants it has under construction. These underground power plants, with a capacity of more than 1,000,000 kw, require moving of 10,000,000 cu yd of rock in excavating headrace and tailrace tunnels and underground chambers to house the generating equipment.

Largest of these are the 285,000-kw Kilforsen power plant, now practically completed, which is exceeded in size only by the Harspranget plant (ENR March 26, 1953, p. 77), and the Stornorrfors project, begun last year, which will be Sweden's largest power station. The latter will contain what are believed to be the world's largest hydroelectric units, four of 130,000-kw each, or a total of 520,000 kw.

Both projects will have 60-ft wide rock chambers for the generating units (which is the same width as at the Harspranget plant) but are more noteworthy for the great size of the tunnels that serve them. The headrace tunnel of the Kilforsen plant, which at present is the largest power tunnel constructed in Sweden, has a cross-section of 2,240 sq ft The 2½-mile tailrace tunnel of the Stornorrfors plant will have a cross-section of 4,000 sq ft, its width being 50 ft and the height 83 ft. This great tunnel is being excavated in three stages.

The 170,000-hp turbines for the Stornorrfors plant are to be of Francis type, with blades and rings of stainless steel.

Use of Kaplan-type runners was investigated, and it was found that employment of this type was not out of the question, notwithstanding the head of 220 ft. By this means it would have been possible to obtain an additional output of 10,000 kw, but the cost would have been increased although not to the extent of rendering the cost per kilowatt prohibitive.

Final selection of the Francis type was due to the fact that the plant will be operated for frequency regulation of the Swedish state network, for which purpose the Francis type is preferable.

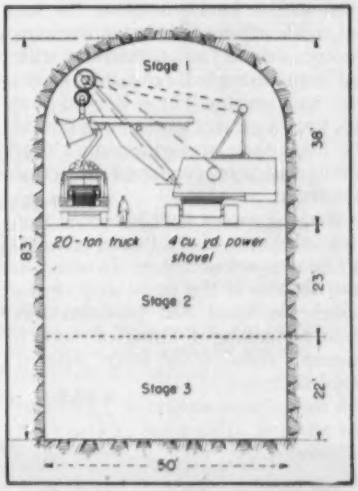
• **Kilforsen power plant**—The Kilforsen project is located on the Fjalls joalven River, which also is used for the transport of logs. That fact added to the design problems as practically the entire flow of the river is to be used for power generation during summer months, leaving an inadequate flow for log transport along the river channel. Consequently, provision for log movements had to be made through the 2.3-mile headrace tunnel and for skimming logs off the forebay to a log flume 2 miles long that returned them to the river below the plant.

Skimming logs from the forebay is accomplished by a floating intake to the log flume that automatically adjusts itself to the level of water in the forebay. A flow of 220 cfs into the flume is required to move 20,000 logs per hour.

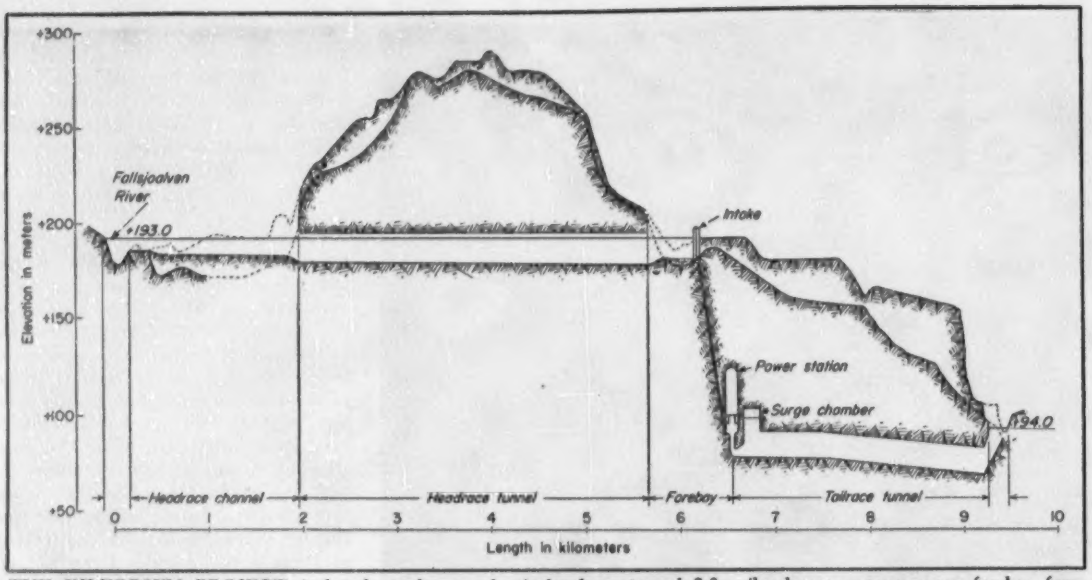
To preserve the appearance of the water course below the diversion dam, five low dams were built along a distance of about 13 miles to form mirror pools. In an emergency, logs can be floated downstream by that route, one of the three segment gates on the spillway of the main dam having been designed for such use.

• **Headrace tunnel**—The cross-section

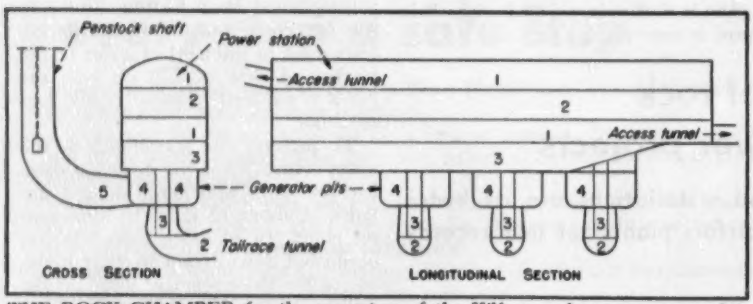
(*Continued on page 42*)



EXCAVATION of the tailrace tunnel of the Stornorrfors plant is being done in three stages, starting with a top heading having a cross-section of 1,700 sq ft.



THE KILFORSEN PROJECT is largely underground. A headrace tunnel 2.3 miles long serves an open forebay from which penstocks in rock shafts serve the underground power plant. The tailrace tunnel is 1.7 miles long.



THE ROCK CHAMBER for the generators of the Kilforsen plant was excavated in five steps, working from the permanent access tunnel and three provisional transport tunnels branching from the access tunnel.

of the headrace tunnel was determined on the basis of providing a free water surface for log flotation. As this was the first time that log movements through a tunnel on an extensive scale had been attempted, exhaustive model tests were made. These showed that logs have a greater tendency to jam at low flows than at higher rates. That finding has been confirmed by actual experience.

Also, the model tests indicated that a smooth lining of the tunnel at water surface was not necessary. However, a short section at the upper end of the tunnel was lined and provision was made for adding a lining of smooth concrete slabs at a later date if found necessary.

A tunnel cross-section of 2,240 sq ft was adopted. This gives 264 sq ft of area above the water surface, which provided space for an inspection car hung from an I-girder set in the tunnel roof. This car is diesel driven.

Of interest to hydraulic engineers is the fact that the additional cost of constructing the tunnel as a free-surface channel about equals the value of the resulting decreased loss of head by friction. The tunnel, except for its flatly curved roof, is roughly rectangular in section, 43 ft wide and 54 ft high.

• **Underground power station**—The Kilforsen machine hall is 315 long and 60 ft wide. Its walls are unlined and its rock roof is reinforced with anchoring rods cemented into drilled holes. These rods prevent big stones or parts of the roof from falling. To prevent small stones from spalling off, the surface was covered with a steel net, secured to the rock and sprayed with cement mortar.

This hall houses three generators of 95,000 kw capacity each. The turbines are Francis type with steel spiral casings. The design for this station permitted concrete work for the generator foundations and the framework to be practically completed before it was necessary to start erection of the machines. This facilitated the work materially.

All material for the power station was transported down an incline tunnel having a gradient of 1 on 7.

The control room is located in a special building at one end of the machine hall. It is ventilated by fans which draw air from the surge gallery. With this arrangement, the air is cooled down and consequently its humidity is reduced in summer time.

The work of an operating staff underground does not as a rule give rise to any major problems in Swedish underground power stations.

• **Tailrace tunnel**—The tailrace tunnel is 1.7 miles long. Except in the 820-ft long surge gallery at the upper end, it is 43 ft wide and 48 ft high (1,890 sq ft). The surge gallery is 73 ft high and is connected with the outer air by a vertical shaft. Its area is 3,000 sq ft.

The tunnels for the Kilforsen plant were dimensioned for a water flow of 11,000 cfs, which, however, can be exceeded by about 10% for a short time.

For the Stornorrfors plant the quantity of flow will be 30,000 cfs. There, it is possible that the tunnel area will be increased over that theoretically required for this flow if that can be done as a practical operation.

• **Rock excavation**—Rock encountered in the tunnels and power station was mostly granite. Blasting operations in the large rock chamber for the power station and its several parts were carried on in five stages following the sequence shown in an accompanying drawing. Only two stages were em-

ployed in the large headrace and tailrace tunnels.

For certain sections, top heading and underhand stoping was employed, while for others bottom heading and overhand stoping was adopted. Where the rock was sound, it was found that both methods are equally satisfactory. For rock of poor quality, however, top heading and underhand stoping is preferable.

In the alternative method, bottom heading and overhand stoping, the stope was either taken out by drilling horizontal boreholes, with which an advance of about 24 ft was obtained for each round, or by drilling upwardly inclined boreholes (angle 60 deg), in which case drilling was independent of firing and short-delay firing could be employed.

The drilling work was performed with drilling machines with pneumatic pusher of 53 mm, and drills with hard metal bits. Excavation and loading were carried out with 3-cu-yd excavators and 15-ton trucks.

During the blasting of the first section of 1,075 sq ft, an average advance of 72 ft per week was achieved including reinforcements. The work was carried out in three shifts, one for drilling and blasting and two for loading. The consumption of explosives amounted to 1.05 lb per cy yd for the whole tunnel.

Reinforcements had to be provided at certain points, but generally speaking, the tunnels are unlined. The costs for reinforcements amounted to about 15% of the total cost for the tunnels.

The costs for blasting the tunnels reached an average figure of $4.00 per cu yd including reinforcements, central administration, administration at the site and general costs. The average wage earned by workmen here amounted to about $1.00 per hour, excluding social advantages.

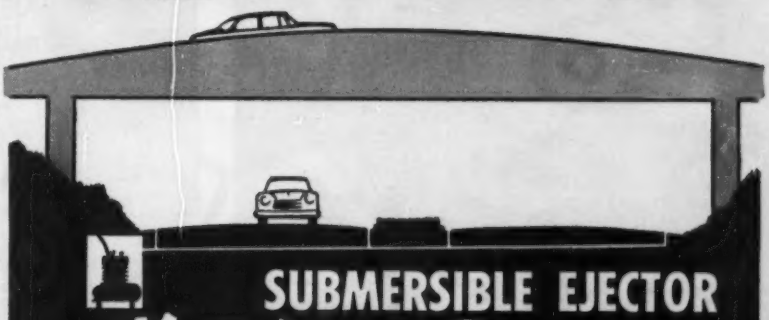
Construction of the Kilforsen plant was begun in 1947 and the first unit went into service in April 1953. The third unit was put into service in April of this year.

A labor force that reached a maximum of 1,000 was required, and a provisional community had to be established to accommodate the majority of these men and their families.

The cost of the Kilforsen plant will amount to 144 million Swedish crowns, or about $28 million. The cost per kilowatt of installed capacity is $98.

The cost of the Stornorrfors project is estimated at 250 million Swedish crowns, or about $50 million. That will bring the cost per kilowatt of installed capacity to about $100, or substantially the same as the Kilforsen plant.

For UNDERPASS DRAINAGE



SUBMERSIBLE EJECTOR

New! with 6" DISCHARGE!

A "Big Brother" to the famous 3" and 4" Pumps

FIG. SE-890

NO PUMP HOUSE REQUIRED
Capacities to 2000 GPM

The new ejector designed for completely submerged operation is constructed with the same engineering features that have made the 3" and 4" Submersible Ejectors so trouble-free and efficient. It can be supplied with 5" or 6" discharge, with heads to 70 feet and capacities to 2000 GPM.

The new pump has been developed to answer the need for low cost installations where large quantities of water must be drained quickly. It is particularly adapted for highway underpass drainage and is designed for continuous operation during flood periods. The NON-CLOG Impeller will handle 3½" solids.

Can be supplied with control systems having no moving parts in the pits. Multiple installations are furnished with controls to program the operation for load requirements.

CONSTRUCTION FEATURES:

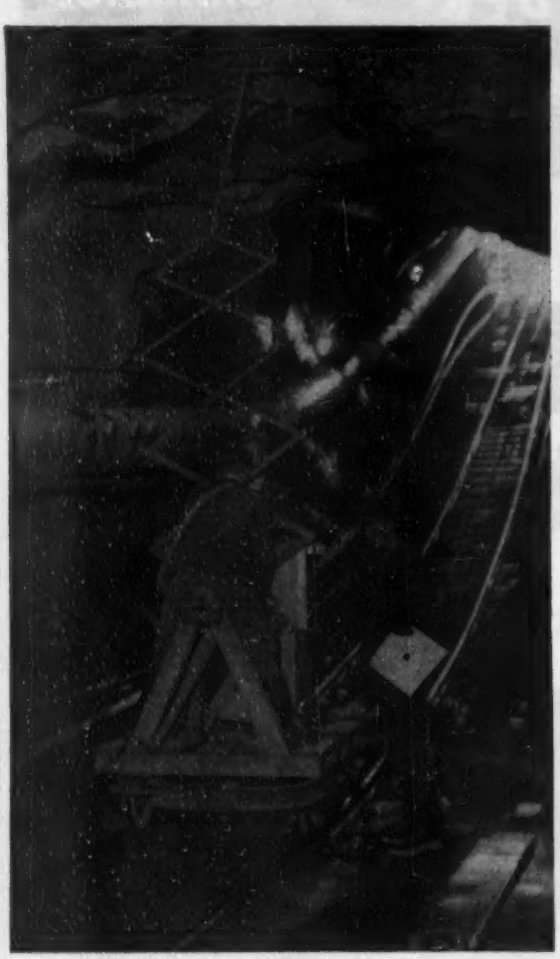
Motor and bearings are hermetically sealed. The motor, housing, drive shaft and impeller — all of the working parts — are an integral and interchangeable unit and can be removed without disturbing the piping. They are not subject to corrosion, deterioration or injury when standing idle—regardless of weather conditions.

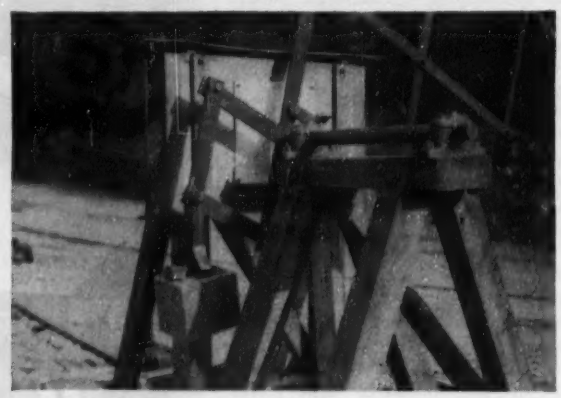
The NON-CLOG Impeller is of manganese bronze; pump shaft stainless steel; permanently sealed ball bearings; volute type casing of nickel iron; motor windings of special design and construction are permanently non-corrosive; motor housing machined and sealed to exclude dirt and water.

Ask for Bulletin SE 860 B

weil PUMP CO.

1528 NORTH FREMONT STREET • CHICAGO, ILLINOIS





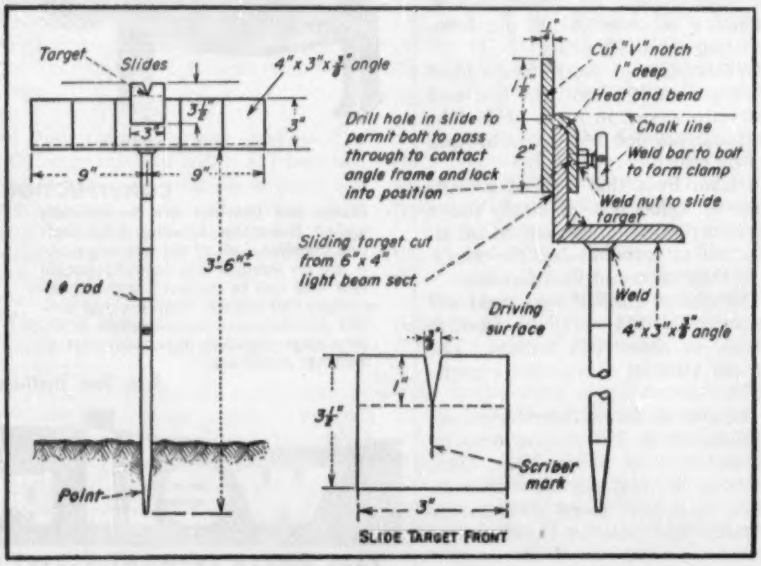
Pantograph Simplifies Cross-sectioning

From "Down Under" comes a method of reproducing tunnel cross sections to scale through the use of a pantograph device. Basic support of the unit was a rail car with a superstructure to carry the main axis of the pantograph. The pantograph was made up of parallelogram units with the outer one of smaller size for easier maneuvering around vent pipes and other obstructions; the extension arm was fitted with a small roller at the tip. A counterweight was used to make the unit free swinging. A pencil or ball point pen was mounted inboard of the main axis and spring loaded against the drawing paper. The paper used can be in either single sheet form or roll form with a clamp arrangement used in the latter case. Scale of the reproduction is variable but in this case 1 in. to 1 ft was chosen.

The machine was designed for recording only the upper section of tunnels but in cases where it is necessary to record the entire cross section the main pantograph mechanism can be cantilevered over the back of the supporting truck. Alex J. Poppins, State Electricity Comn. of Victoria, 22-32 William St., Melbourne, Australia.

Steel Batter Boards Make a Handy Aid

Although the original cost of steel batterboards is above average, their re-usability and handiness can often offset the additional expense. Using the type illustrated above requires driving the batterboard close to the control line. The slide target is then locked in place after positioning with instruments and a tightly stretched chalk line or piano wire is fixed in the notch. The batterboards can be fabricated in almost any small shop, then painted red and white for greater visibility. R. H. Sauer, 5745 Centre Ave., Pittsburgh 6, Pa.



WHICH HYDRANT HAS THE REPLACEABLE BARREL?
MATHEWS
Yes, sir! The barrel containing all working parts fits into the protection case. All you do is put in a new barrel when it's broken in a traffic accident.

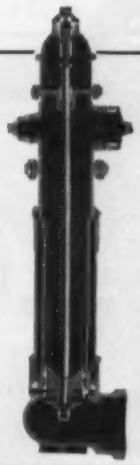
MATHEWS Means Fire Protection

LONG LIFE. Mathews Hydrants are protected at wear points by bronze bushings — corrosion and rust are thoroughly licked.

TROUBLE-FREE. The stuffing box plate, cast integral with the nozzle section, provides a positively leak-proof construction — water, sediment and ice cannot interfere with operating thread.

LOW-COST MAINTENANCE. Only one point requires lubrication — and that only during routine inspections.

REPLACEABILITY. A Mathews leveled in an accident can be replaced without excavating and in a jiffy. Community fire protection is interrupted only for a few minutes.



The Mathews includes every quality feature . . .

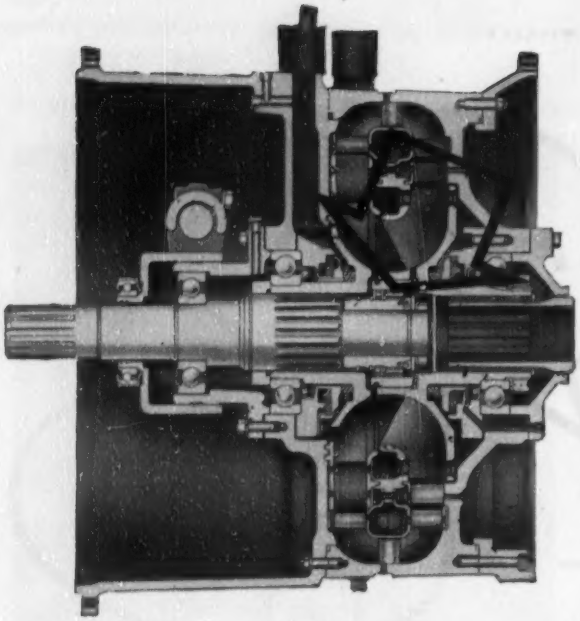
Compression type valve to prevent flooding • Head turns 360° simply by loosening bolts • Replaceable head • Nozzle sections easily changed • Protection case of "Sand-Spun" cast iron for strength, toughness, elasticity • A modern barrel makes an old Mathews good as new • Mechanical-joint pipe connections as needed

MATHEWS HYDRANTS

Made by R. D. Wood Company

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves



Twin Disc freewheel locks impeller and turbine together to provide absorption of braking horsepower by the converter. In locking the impeller to the turbine, the freewheel forces the truck's driving axle to turn the converter pump wheel—providing smooth, powerful Hydrodynamic Braking.

The Torque Converter with *Built-in Braking!*

When you specify torque converters for your heavy-duty off-highway trucks, be sure to get the *extra* advantages of Twin Disc Three-Stage Truck-Type design, with *built-in* Hydrodynamic Braking *at no extra cost.*

Pioneered by the Twin Disc Clutch Company, Hydrodynamic Braking in the Model CF Torque Converter is actuated automatically when the operator lets up on the accelerator. No accessory equipment or additional cooling system for braking is required.

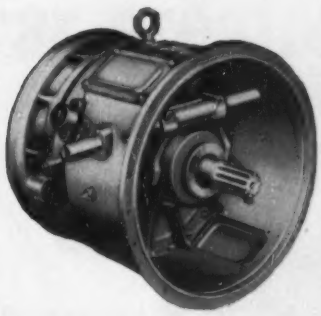
Here is the most effective Torque Converter downhill retarding ever developed . . . smooth, effortless braking that gives your operators *complete control all the way down.* And by combining built-in Hydrodynamic Braking with friction braking of the engine, Twin Disc offers *maximum* downhill retarding *without shock-loading the transmission.*

Add the powerful torque multiplication of Twin Disc Three-Stage design (up to 6:1 at stall, highest in the field) and you have virtual *elimination* of uphill shifting as well as of downhill pedal-braking . . . providing *faster work-cycles with more payloads hauled per day—lower ton-mile costs*—and *savings on engine, tires, brakes, and drive-line components.*

This Dart Model 140 mining truck (below) climbs 15% grades with 22-ton payloads *in one gear*—comes back down *without pedal-braking*—by utilizing up-to-6:1 Converter Drive and *built-in* Hydrodynamic Braking of Twin Disc Model CF Three-Stage Truck-Type Torque Converter (shown above in cutaway). Request Bulletin 501.

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES OR SALES ENGINEERING OFFICES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • SEATTLE • TULSA



Twin Disc built-in Hydrodynamic Braking

Today—in construction, mining, logging, and in the oilfields—users of heavy-duty off-highway trucks are gaining distinct advantages from Twin Disc Truck-Type Torque Converters, designed for specific operating conditions.

The Model CF Torque Converter (above) provides *automatically-actuated* Hydrodynamic Braking and Converter Drive—controlled by depressing or letting up on the accelerator—for operations involving constant climbing and descending of steep grades. The *built-in* braking feature incorporates a freewheel, which forces the truck's driving wheels to turn the impeller for a smoother, more powerful braking effort up to 70% of the engine's hp.

For operations combining steep grades with long, flat runs, Twin Disc provides the Model DF Torque Converter, with *Fingertip-Controlled* Hydrodynamic Braking, Converter Drive, and Lock-Out Drive for maximum speed and economy.

TWIN DISC

INTERNATIONAL

Bridge Dispute Ends

Toll project to replace old Fraser River span

One of Canada's "politically" famous bridges finally is to be replaced. It is the old two-lane Marpole Highway Bridge that crosses the Frazer River to connect the British Columbia mainland with the island on which Vancouver Airport is located.

The new bridge—an $8-million project—was proposed in 1953, but construction has been delayed by a three-way dispute over financing between the provincial, Canadian and Vancouver governments. Both the federal government and the city of Vancouver have disclaimed responsibility since the bridge forms a part of the provincial highway system.

Now provincial officials have decided that the new bridge will be built by the recently formed B. C. Toll Highways & Bridges Authority and operated on a toll basis. Tolls will come off the bridge as soon as Vancouver and Canada pay one-third of the cost.

The new structure will be a two-bridge system. The 6,600-ft main channel bridge will have the longest plate girders in Canada—three continuous plate-girder spans of 200 ft, 300 ft and 200 ft. The high level span will be 5,000 ft, and pre-stressed, post-tensioned stringers for its portions of five spans will be the longest ever made for a Canadian bridge.

The second structure—a low level, two-lane bridge spanning the middle arm of the river—will be 1,500 ft long.

The center portion of the structure will be a plate-girder swing section with an hydraulically operated mechanism for opening the span.

Cloverleaf arrangements will be needed at both ends of the bridge system to handle traffic from Marine Drive on North Bank and Bridgeport Road on South.

Construction of the bridge is expected to be an 18-month job. Bids will be in by the first of the year, and work should begin in the spring.

Rhine-Rhone Canal Link —$78.5-Million Project

Plans for a modern $78.5-million canal to link two of Europe's major inland waterways—the Rhone and Rhine Rivers—have been submitted to the Swiss parliament for approval. The project includes four new hydroelectric plants costing an additional $51.5-million.

If the proposed works are undertaken, it will be possible for barges up to 900 tons capacity to go from Rotterdam, on the North Sea, all the way through Central Europe to Lake Geneva. And if France builds additional navigation works on the Rhone River, barges then could sail on down into the Mediterranean Sea.

There are two possible links between the two rivers. One is by way of the existing small canal from Mulhouse to Lyons, France—a route that does not go through Switzerland. The alternative route—favored in current discussions—involves using the Rhine up to its junction with the Aare River. The Aare would be used as a canal, with new canal works connecting its upper reaches with Lake Geneva.

A Swiss 5-year study of the project estimates that some 2,200,000 tons of goods would be carried each year on the canal. Industry in Switzerland reportedly would save more than $2.7-million a year in transportation costs.

Major Canadian Airports Slated for Modernization

The first steps are being taken in a major program to enlarge all leading Canadian airports.

Montreal and Ottawa will have their facilities improved in an immediate construction program estimated to cost over $6 million. Bids for both projects will be called for next spring. Meanwhile, Toronto is planning a $75-million long-range modernization and expansion program for Malton Airport.

These are how the plans shape up:

- Montreal—Dorval Airport will have a new $4-million air terminal building to take the place of existing separate buildings for domestic and international traffic. The terminal, to be three or four stories high, will be designed to take care of anticipated air traffic growth for the next 15 years. Other parts of the project include: extending the field to 4,000 acres and the main runway from 7,000 to 10,000 ft; building a landing space for helicopters.
- Ottawa—Uplands Airport is now being developed as an alternative landing field for trans-Atlantic flights (when Montreal is fogged in) and also for use by Canadian jet fighters. It will have a new $2-million terminal to handle both domestic and interna-

(*Continued on page* 50)

We smash truck axles

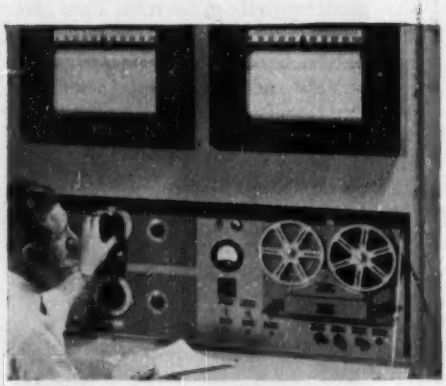
in the new Timken-Detroit indoor proving ground ...and only Timken has it!

We twist, bend, jounce and jerk them. Duplicate every possible operating condition. Then toss in some "torture-tricks" of our own.

It's calculated destruction! But we know, and can tell you in advance, that a Timken-Detroit axle can take a murderous beating on the job.

Our "Torture Chamber" is a multi-thousand acre proving ground *capsuled into one room!* In it our engineers can put 50 years of experience to work . . . for you . . . experience gained in building axles for trucks, buses, trailers, farm machinery. Stock axles and gearing are subjected *indoors* to any *outdoor* operating condition—under scientific control and analysis.

The result? You enjoy longer axle life; less maintenance, repairs and downtime; lower operating costs, higher profits. Good reasons why Timken-Detroit axles are the choice of the leading manufacturers and owners.



This is our "Torture Tester." He gives axles and gearing the works in the "Torture Chamber." Above him are graphs showing speed and torque performance under any conceivable operating condition. Soft ground . . . twisting roads . . . long grades or fast highway speeds. With special dials, recorders, and electronic devices he actually *drives* the axle with scientific precision—*from his chair!*

How TDA proves axle quality in this "Torture Chamber"

We take an axle out of stock... then run a test like twisting the axle shaft 14°, backward and forward—36 times a minute, 24 hours a day, days on end. Or simulate a chuck hole shock every 4 seconds, 24 hours a day for months. Even "bend test" an axle housing for 1,000,000 cycles.

Far greater gear ratio "spread" with TDA 2-SPEED AXLES,

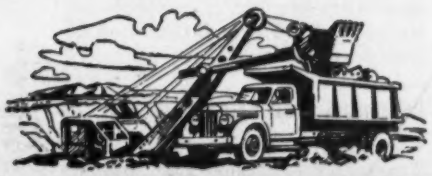
due to exclusive double-reduction design!

Unequalled Flexibility! Only Timken-Detroit 2-Speed axles are available in *three* different ratio "spreads" to meet any transmission-engine combination: 28%, 37% or 49%. Unlike ordinary designs that are limited to 37%, this Timken-Detroit Axle selection may be obtained simply by changing the low speed helical gear set.

Here's How the TDA 2-Speed Principle Works: A husky hypoid ring gear and bigger, stronger pinion set (No. 1 in illustration below) provides the *first step* of the total gear reduction for both fast and slow ratios. Two large, heavy-duty helical gear sets provide the *second step*. Both sets are of balanced size and capacity. One set (No. 2 in illustration below) is for fast speed—the other (No. 3) is for slow speed. The clutch collar (No. 4 in illustration) moves to left or right to engage one helical pinion or the other.

The Result: Complete elimination of small, complicated parts and midget-size gears! Larger hypoid-helical design gives more teeth in contact—reducing load per unit of contact area—for more positive, quiet operation. Bearings are larger. There's longer engine and truck life. When you divide the total gear reduction, you double its life expectancy. The helical pinion not in use idles. TDA gears operate in any ratio *indefinitely* without overheating.

to bits



TIMKEN Detroit AXLES

TIMKEN-DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN

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WORLD'S LARGEST MANUFACTURERS OF AXLES FOR TRUCKS, BUSES AND TRAILERS

Plants at:
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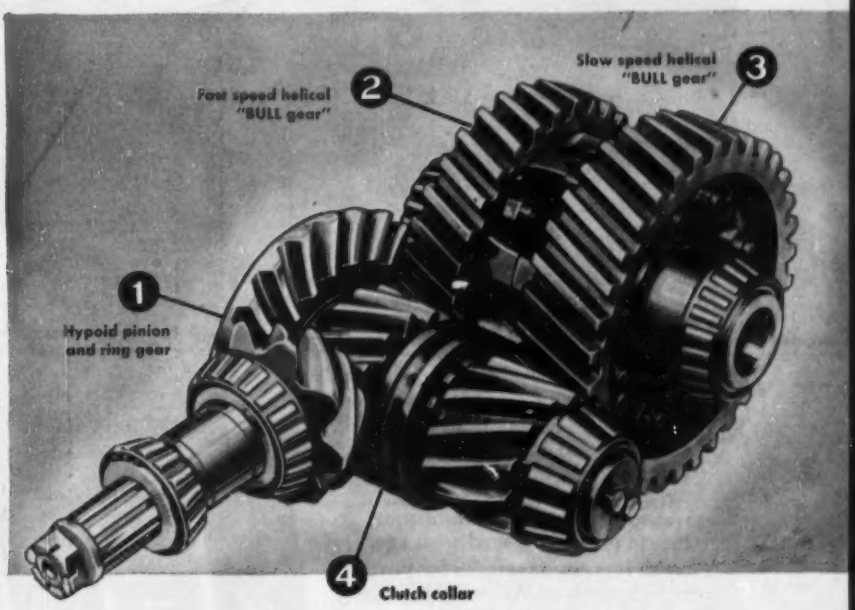
Oshkosh, Wisconsin • Utica, New York
Ashtabula, Kenton and Newark, Ohio
New Castle, Pennsylvania



7 basic axle capacities! Only TDA, world's largest manufacturers of truck, bus and trailer axles, offers a family of 7 basic axle capacities, each with *interchangeable* final drives: single-speed single-reduction—single-speed double-reduction—two-speed double-reduction—using the same axle shafts and housing. Nowhere is there such a selection to fit all needs.

Exclusive "Torsion-Flow" shafts! Forged so that grain structure of steel conforms to shaft profile, thus assuring uniform distribution of stresses. Exclusive heat-treating formula provides a resilient axle shaft core graduated to a tough, hard outer surface—the ideal combination for axle shaft life. And TDA "Torsion-Flow" shafts are guaranteed for 100,000 miles or 3 years—whichever occurs first.

Hot-forged steel housings! Pound for pound the strongest, most rigid ever built! Rectangular TDA housing shape gives maximum strength, uniform stress distribution, minimum weight. Ask about the TDA "Life of Vehicle" guarantee.

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tional passengers. A special feature of the building will be a museum with a 5,000 sq ft area for exhibiting Canadian aeronautical treasures.

• Toronto—During the next 20 years over $22 million will go into the modernization of Malton Airport to provide dual runways and a larger field space. Plans already in architect's hands also call for a new terminal building.

Use of Atomic Energy Part of Big Power Plan

A huge 10-year power expansion program that includes possible use of atomic energy is now under study by the Manitoba Hydro-Electric Board.

The program, which could get under way by 1960, includes a $90-million project to develop the Grand Rapids site on the Saskatchewan River, 250 mi northwest of Winnipeg. If this site is found to be uneconomical, consideration will be given to construction of a large steam generating station somewhere in the Winnipeg-Red River region.

Following completion of this project—whether steam or hydro-electric—the Nelson River may be developed at a site that will give an economical power layout for a field expenditure of about $60 million.

Other parts of the program call for construction of a fifth power unit in the Brandon station and an arrangement for power inter-change with the Hydro-Electric Power Commission of Ontario.

International Briefs . . .

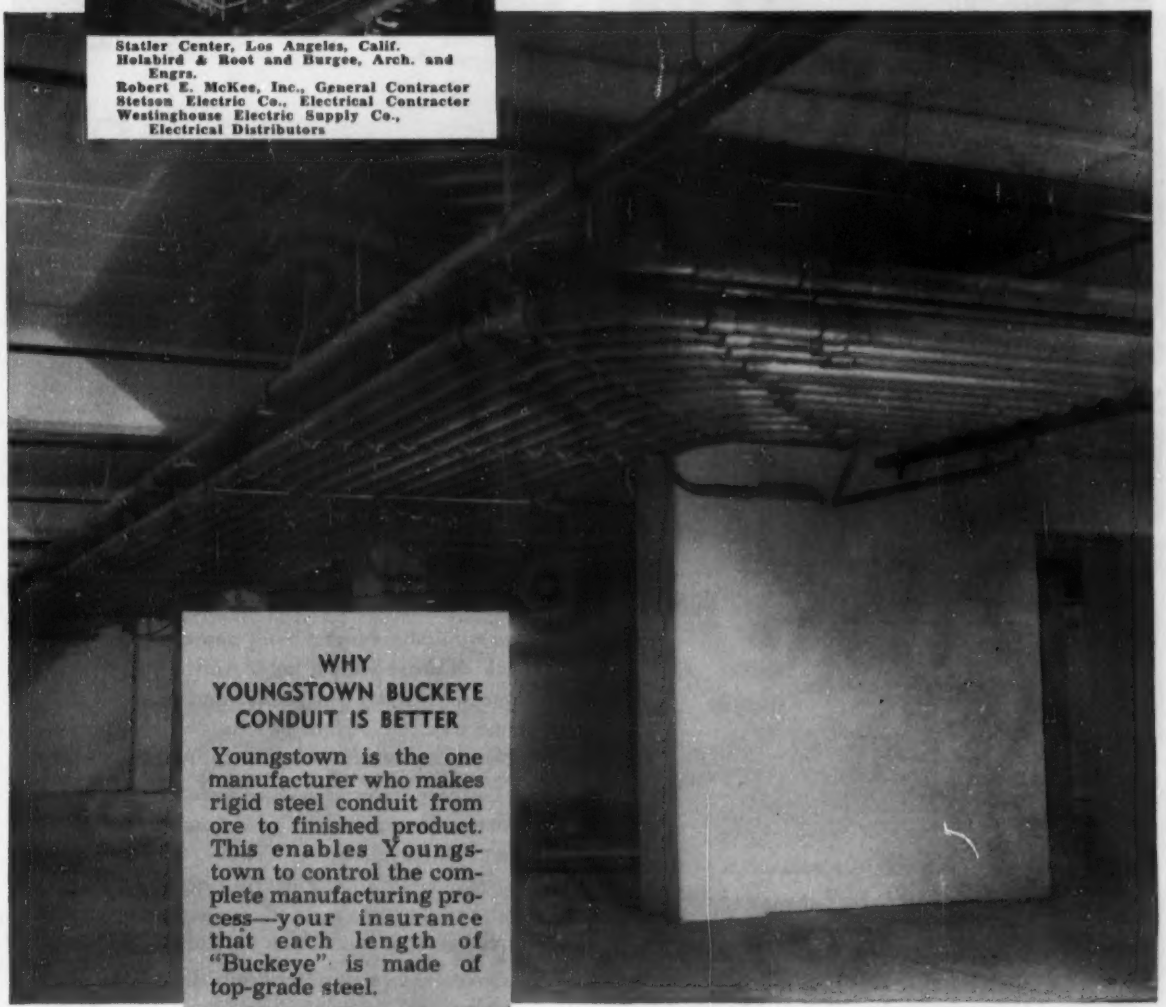
• **Spanning a lake**—A bridge over Venezuela's Maracaibo Lake will be built between Los Haticos on the western shores of Palmarejo on the eastern side. Plans are being made to run railroad tracks over the span, which will rise 65½ ft over the water.

• **Harbor toll tunnel**—Toronto plans to build a 2,000-ft toll tunnel under the western entrance of its harbor to permit cars to drive to a chain of harbor islands. (The islands now can be reached only by ferry boats.) The $5-million project will connect with a proposed road running the length of the island group.

• **Rooftop helicopter base**—Scandinavia's first helicopter landing platform is scheduled to go up on a 12-story office building in Oslo, Norway. The 4,500 sq ft structure will be erected above the building's regular roof in order to clear obstructions.

Youngstown Buckeye Conduit protects Statler wiring in L. A.

Statler Center, Los Angeles, Calif.
Holabird & Root and Burgee, Arch. and Engrs.
Robert E. McKee, Inc., General Contractor
Stetson Electric Co., Electrical Contractor
Westinghouse Electric Supply Co., Electrical Distributors



WHY YOUNGSTOWN BUCKEYE CONDUIT IS BETTER

Youngstown is the one manufacturer who makes rigid steel conduit from ore to finished product. This enables Youngstown to control the complete manufacturing process—your insurance that each length of "Buckeye" is made of top-grade steel.

Youngstown

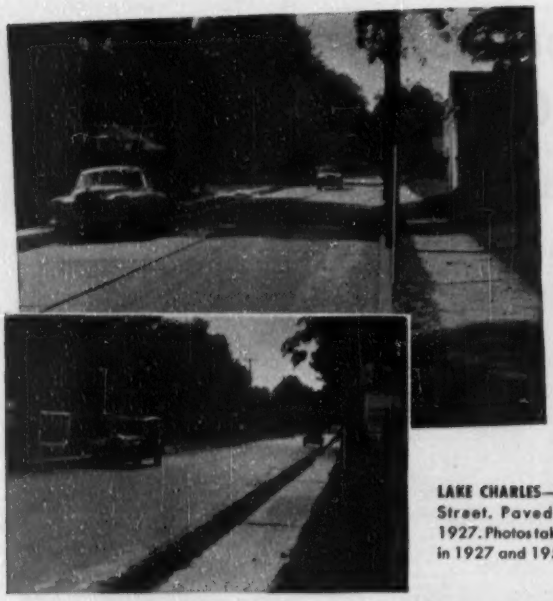
QUALITY V YOUNGSTOWN SERVICE

●Years ahead in design and accommodations, the new $25 million Statler Hotel in Los Angeles installed Youngstown Rigid Steel Conduit to protect wiring throughout its 13 stories. For the future, management can be sure that the electrical systems will be safe—adequately guarded against those enemies of all wiring jobs—water, moisture, vapors, dust and dirt.

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices: Youngstown, Ohio - Export Office: 500 Fifth Avenue, New York 36, N. Y.

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES



LAKE CHARLES—Iris Street. Paved in 1927. Photos taken in 1927 and 1953.

HOMER—The Public Square. Paved in 1922. Photos taken in 1922 and 1953.

BASTROP—W. Cypress Ave. Paved in 1927. The photos were taken in 1927 and in 1953.

NEW ORLEANS—Palm Terrace was paved in 1925. The photos were taken in 1927 and 1953.

HERE TODAY *and still here tomorrow*

that's the story of Louisiana's CONCRETE STREETS

Had you visited Louisiana cities a generation ago you would have found many new concrete streets such as those shown here. And if you retraced your steps today you would find many of these same concrete streets still on the job—positive proof of concrete's great durability and economy.

Today these veteran streets are carrying much more and much heavier traffic than their designers could have foreseen. Today, too, because of improvements in engineering design, materials and construction methods, concrete pavements can be built to last at least 50 years.

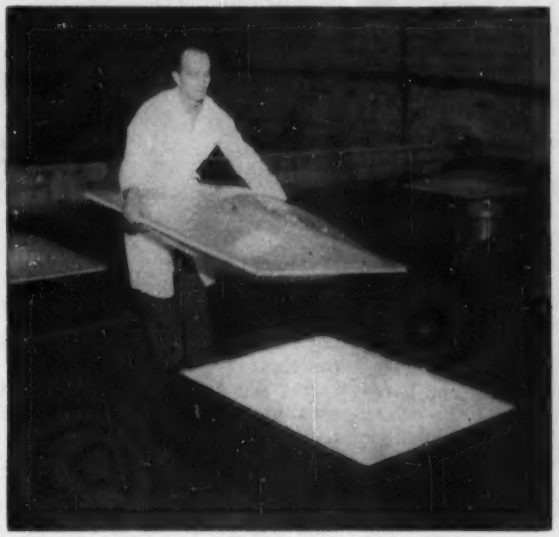
Concrete streets are not only durable and economical but also much safer. Their gritty, highly skid-resistant surface permits quicker, safer stops, wet or dry. Their light color, reflecting up to four times more light than dark pavements, not only reduces street lighting costs but also enables drivers to see farther and better. *When you can see better you are much safer!*

For more information about durable, safe, ***low-annual-cost*** concrete streets, write for free literature, distributed only in U. S. and Canada.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

Dept. 12c-17, 33 West Grand Avenue, Chicago 10, Illinois



ELIMINATION OF CONDENSATION difficulties permits plastering of the lightwell right up to the edge of the curbing.

SKYLIGHT IS RETAINED by pre-cut and pre-drilled stainless steel rails. Twist nails with gaskets secure the rails.

Plastic Skylights: Two Domes Are Better Than One

Dubl-Dome is the name given to a new vacuum insulated skylight designed to eliminate moisture condensation and provide more than five times the insulation protection of ordinary single dome types.

According to A. D. Hughes, professor of mechanical engineering at Oregon State College, Corvallis; for a single-walled skylight, if it is assumed that the inside air is at a 45% relative humidity and 70 F., condensation would be expected to occur when the outside temperature was 38 F.; yet the outside temperature could go down to — 100 F. and no condensation would occur on a triple-walled skylight. Further, the heat transfer co-efficient of the triple-layer skylight with vacuum is only 18.7% of the single-layer type.

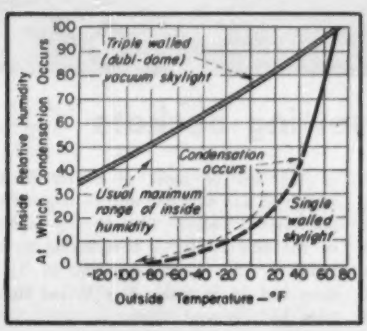
The new skylight has a permanently sealed partial vacuum between the upper and lower domes that restricts the transmission of exterior noises and guarantees non-entry of dust or dirt into the hermetically sealed area between the domes. The center stress member, a single flat sheet of plexiglas, is basically a tension device, compensating the compressive forces of the outer domes. Form and design of the unit is said to be permanently stabilized by this member regardless of atmospheric temperature and pressure changes.

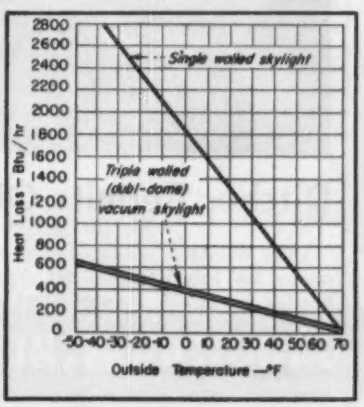
The skylight is equipped for rapid installation; the dome is shipped ready to place over the curb. A ductless cork-neoprene gasket is adhered to the top edge of the curb to form a cushion between the dome and the curb, and stainless steel retaining rails are pre-cut to size and drilled to give strength and rigidity when nailed to the curb. The ¾-in. neoprene spacing washers are factory attached to the underside of the rails at each hole. Included are 1¼ in. twist nails, with neoprene washers, for securing retaining rails. No special tools are needed for the installation.

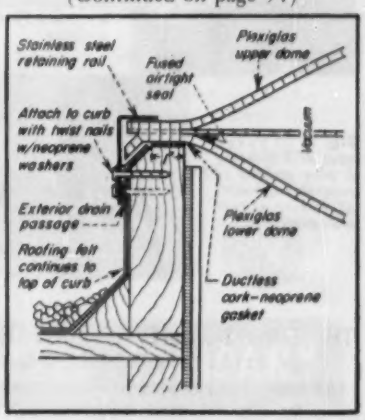
The Dubl-Dome permits the interior of the light well to be finished up to the base of the skylight since there is no condensation gutter to hide, an important factor when cleanliness of design is considered. Also, there is no gutter-flashing to disassemble for periodic cleanings.

With three thicknesses of plexiglas fused into a single unit, any accidental

(Continued on page 54)


Inside Relative Humidity At Which Condensation Occurs
Triple walled (dubl-dome) vacuum skylight
Condensation occurs
Usual maximum range of inside humidity
Single walled skylight
Outside Temperature — °F





CONSTRUCTION IDEA CUTS STEEL COSTS $15 TO $20 A TON

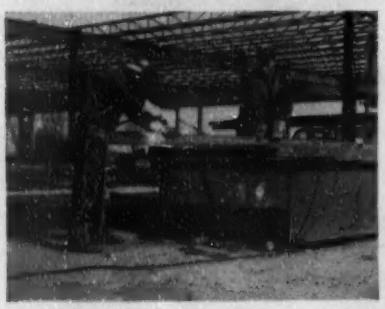


Fig. 1. *440' x 440' all welded framework for American Sterilizer Company, Erie, Pa. On-the-site fabrication cuts steel handling costs, saving an estimated $15 to $20 a ton.*

ON-THE-JOB fabrication of this 190-ton framework has saved $15 to $20 a ton compared to buying certain structural numbers already fabricated.

Standard structural members are cut to size with torches. Clips and base plates are then welded to columns with Lincoln "Fleetweld 5" electrodes using Lincoln "Shield-Arc" DC engine-driven welders.

Principal steel members are 24 inch 110 pound, wide flange beams 39 feet 3 inches long and 8 inch 31 pound columns. The members are put up with erection bolts and are field welded.

Forty-foot clear-span joists are used, welded on 6 foot 8 inch centers. Roofing is steel deck plug welded to roof joists.

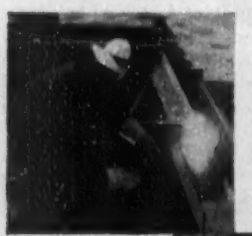


Fig. 2. *Welding window frame on fixture made from 24" I beam. Framing is simply tacked to fixture before final assembly by welding.*

Fig. 3. *20 gauge steel deck sheeting is plug welded to joists through metal decking at regular intervals.*

THE LINCOLN ELECTRIC COMPANY
Dept. 2310, Cleveland 17, Ohio
THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

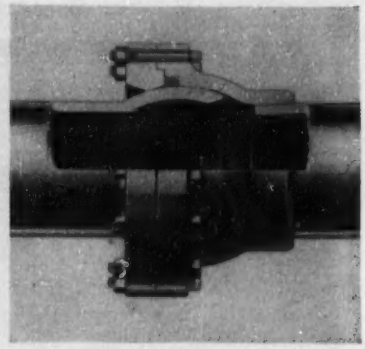
damage to either dome does not mean possible leakage, as in the single dome units. The undamaged section will give protection until the damaged unit can be replaced. An additional feature is that the elimination of inside condensation permits the unit to be installed on roof slopes up to 30 degrees.

The new skylight is available in ten sizes from 24 by 24 in. to 48 by 72 in. Shipping weight runs from 13 to 115 pounds. Manufacturing facilities are available for other dimensions at slight additional cost.

All sizes are available in these combinations: upper dome and inner member clear and lower dome white translucent plexiglas; upper and lower domes clear and inner member white translucent plexiglas. All domes are available in tinted or clear plexiglas on special order. BETTCHER PLASTICS CO., 1616 N.W. GLISAN ST., PORTLAND, ORE.

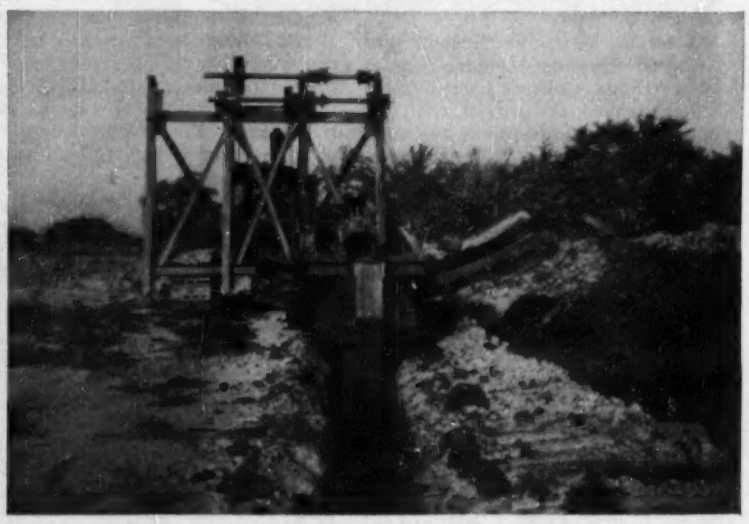
Flexible Cast Iron Joint

Due to the flexibility of its ball-and-socket joint, this new type of cast iron pipe is especially designed for under water river-crossing. In fact, it is called "Clow Cast Iron River Crossing Pipe." It can be deflected as much as 15 deg, according to the manufacturer, without impeding the flow of the pipe's contents.



But this free-flowing characteristic even under extreme deflection isn't the only advantage claimed for this construction. There are only three pieces to each joint—one complete pipe, one solid follower ring, and one solid ring gasket—in addition to the bolts and nuts. There are no split parts, and the rubber gasket, which is symmetrical in cross section, cannot be installed the wrong way.

The relative ease of joint make-up, together with its longer laying lengths, about 18½ ft, are said to result in lower costs of installation. JAMES B. CLOW & SONS, 201-299 N. TALMAN AVE., CHICAGO 80, ILL.



Ditcher Permits Offsetting Buckets

A Gar Wood-Buckeye special model 306 ditcher has been developed for digging trenches for roadside drainage where narrow shoulders and sloping banks or other obstacles prevent standard ditchers from operating. The ditcher has a frame that allows the digging wheel to be positioned to the left or right of center to dig trench in line with the outside edge of the machine's crawlers. The digging capacity of the new model is comparable to the standard 306, which digs up to 5½ ft deep and 24 in wide. Gar Wood Industries, Inc., Wayne, Mich.

New Facia Strip Available With Sliding Door Hardware

A new facia strip is available for use with M-D sliding door hardware. Designated as FM-300, the new facia strip is made of extruded aluminum and has a natural metal finish that can be left as is or painted.

The facia strip is attached directly in front of the overhead track. The front face of the strip measures 2 in. deep and covers all exposed parts of the hardware. When placed in position near the edge of the header the facia strip is flush with the edge of the casing and eliminates further need for wood trim. The FM-300 is installed at the same time the hardware is hung.

Available in standard lengths for any opening, the strip comes with holes drilled and necessary screws. MACKLANBURG-DUNCAN CO., BOX 1197, OKLAHOMA CITY, OKLAHOMA.

Air Conditioners From 2 To 7½ hp Require No Water

Said to be the first complete line of packaged air conditioning units requiring no water whatsoever, Carrier's new units are designed particularly for use in stores, suites of offices and other large spaces where water may be limited or where there may be piping difficulties.

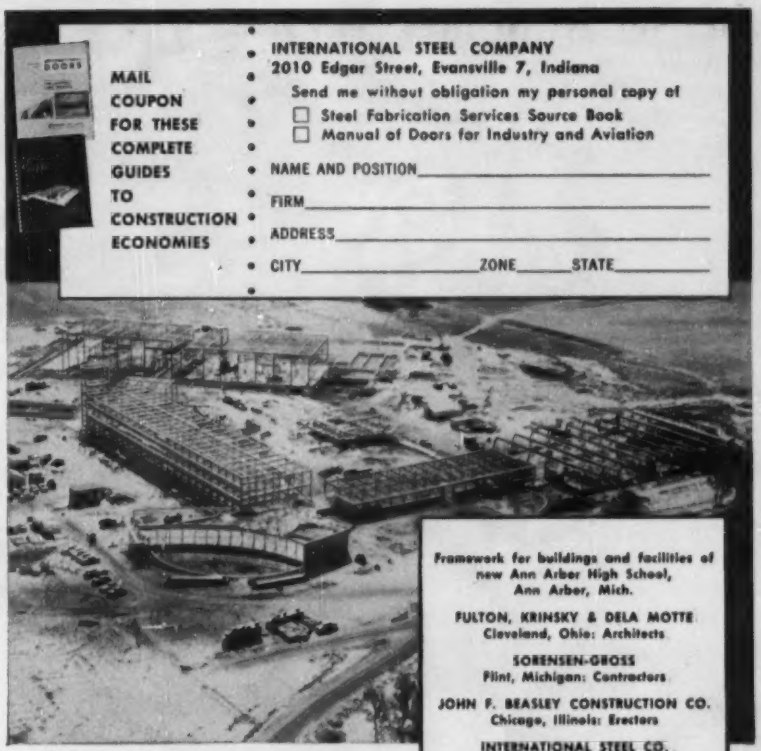
The new models employing air-cooled refrigeration will be manufactured in four sizes from 2 to 7½ hp; installations requiring greater air-cooled capacity may be handled by multiple units.

All essential refrigeration and air conditioning components except the air-cooled condenser are housed in a compact cabinet. The air-cooled condenser in its weatherproof casing may be placed at any convenient outside location such as the top of a roof or setback area, or it may be located inside in a storage or supply closet, or furred into the wall with ducts to provide a supply of outside air.

In addition to supplying summer cooling, the unit can be installed with a special coil for conditioned winter heating—any source of steam or hot water can be used.

Ductwork can be led either from the top of the conditioners, or from the side if headroom is limited in some commercial applications. If floor space is at a premium they can be suspended from the ceiling or installed on top of built-in shelving or cabinets. CARRIER CORP., 300 S. GEDDES ST., SYRACUSE, N. Y.

(*New Products continued on page 58*)



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2010 Edgar Street, Evansville 7, Indiana

Send me without obligation my personal copy of
☐ Steel Fabrication Services Source Book
☐ Manual of Doors for Industry and Aviation

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And so it goes with all phases of all-inclusive INTERNATIONAL SERVICE. It is service rendered regularly and profitably for leading builders, businesses, and industrial firms nationwide. And it is backed by experience equally broad in scope, always at your command.

Next time you need structural or warehouse steel, a standard or special-purpose door of any size — next time you're faced with a steel fabrication problem that defies solution — investigate nationally proved and *approved* INTERNATIONAL SERVICE. In the meantime, mail the above coupon for newest complete data.

Recently completed addition at this big Beeler Warehouse Corp. plant, brings to over 400,000 sq. ft. the total area now framed in steel supplied by International — and utilizing 42 vertical-lift doors engineered and built by International.

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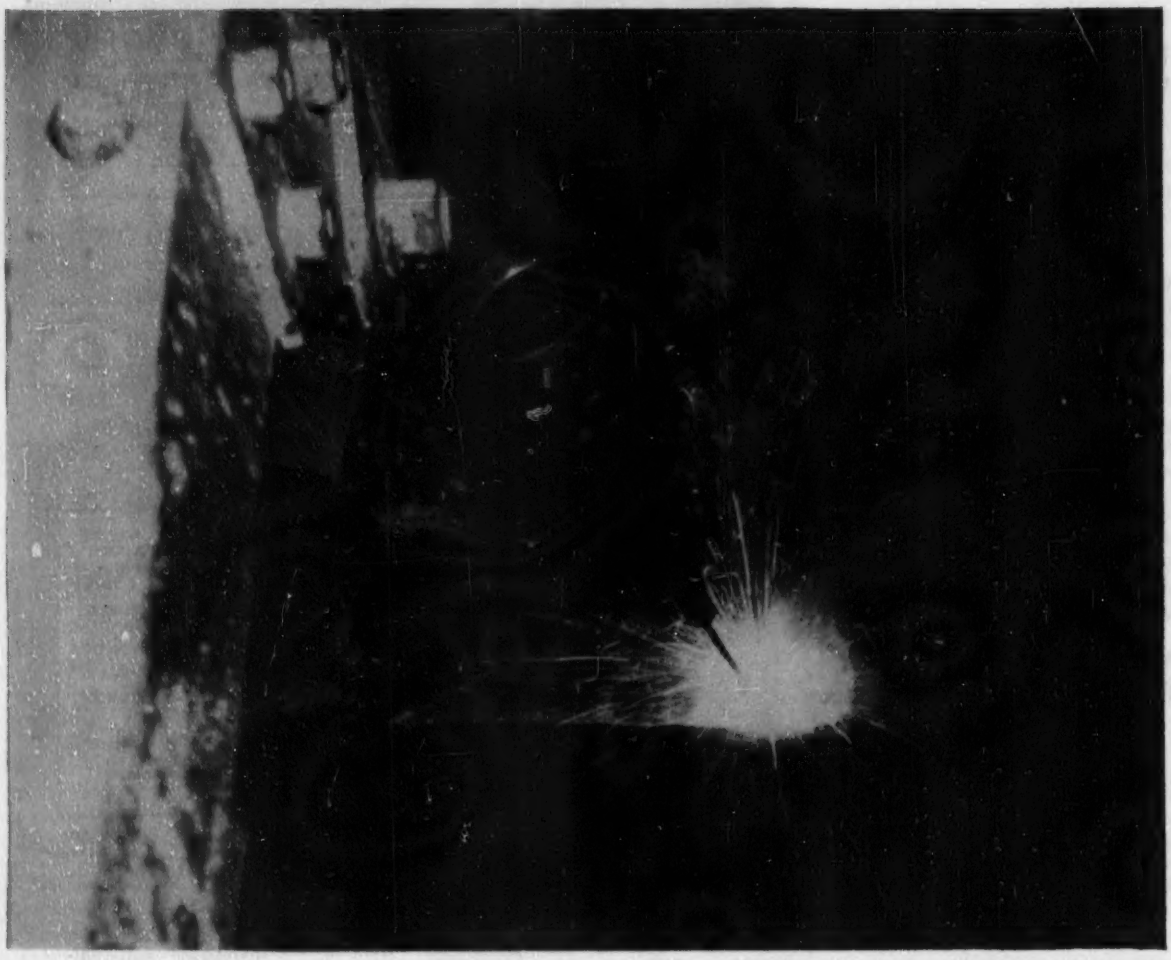
INTERNATIONAL STEEL COMPANY



Crusher rolls such as this can be rebuilt with Stoody Magnecote in about half the time with a 30% saving in material cost. Service life is usually twice that of a new roll.

THE STORY OF STOODY MAGNECOTE

A new build-up and hard-facing process that deposits weld metal faster, cuts labor and overhead costs

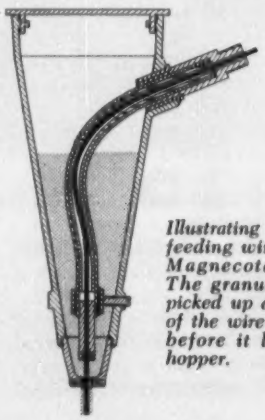
Stoody Magnecote is a new method for making high speed weld deposits. It possesses all the flexibility of manual welding with greater speed than automatic welding. Magnecote's primary applications are building up and hard-facing heavy equipment, crushers of all types, shovel parts and similar heavy sections. Because of its great speed—conservatively 3 times faster than manual welding—*far more work can be accomplished within a given time, labor and overhead costs are reduced accordingly.*

Using an annealed 3/32" or 5/64" .60-.70 high carbon wire as an electrode, deposit analyses can be varied, simply by changing the granular magnetic flux. At present, four Magnecote fluxes are available covering build-up and hard-facing requirements.

HOW STOODY MAGNECOTE OPERATES

The Magnecote process is applicable to all present semi-automatic welding machines. It needs only the addition of a Stoody Magnecote Hopper for feeding the flux.

Welding current passing through the bare wire (electrode) develops a magnetic field. Flux granules within the hopper are magnetically attracted to the wire, forming a uniform coating. When the arc is broken and the wire ceases to feed, small permanent magnets in the tip dam the flow of flux.



Illustrating method of feeding wire through Magnecote hopper. The granular flux is picked up at the base of the wire guide just before it leaves the hopper.

(*Advertisement*)

THE 4 MAGNECOTE FLUXES

MAGNECOTE 301—A build-up material producing Hadfield manganese deposits.

MAGNECOTE 304—A machinable build-up material for use on carbon or low alloy steel equipment.

MAGNECOTE 305—A hard-facing alloy having high abrasion resistance and good impact strength.

MAGNECOTE 302—A hard-facing alloy having high impact strength and good abrasion resistance.

Welding time on this Hammermill Hammer was cut in half with Stoody Magnecote. It was first built up then hardfaced for maximum life.

MAGNECOTE PROCESS OFFERS MANY OTHER ADVANTAGES

Flux dams are unnecessary—all flux is consumed. There are no flux recovery or grinding problems. Since the shielded arc process is employed, the work is visible to the operator at all times. Welding is continuous—no stub end losses. Material costs are lower than for comparable manual electrodes. Appearance of deposits gives a good indication of weld quality. Deposits are remarkably uniform, sound and free from porosity.

Multiple passes are made with ease. Amperage ranges from 200 to 350.

UNUSUAL WELDING SPEED CUTS COSTS

Considerable field work has now been completed using Stoody Magnecote on production work. The following are typical of results obtained on CRUSHER ROLLS:

Manganese Shovel Track Pads are built up with Magnecote 301. Two finish passes of Magnecote 305 insure extra wear resistance. Probable service life—50% more than replacement parts.

Case No. 1:

65 lbs. of Magnecote 302 were deposited in 5½ hrs. In comparison, using the two-rod filler method, 40 lbs. were deposited in 8 hrs.

Case No. 2:

On a 40" O.D. roll with a 22" face, 180 lbs. of Magnecote 301 were applied in 18 hours. The job was completed with a final pass of Coated Tube Stoodite. Total build-up: 1¼" on diameter.

On a conservative basis where a welder deposits 3 to 4 lbs. per hour by manual methods *he can now lay down from 8 to 12 lbs. per hour with Magnecote. Combined savings in labor and overhead easily amount to several dollars per hour.*

Stoody Magnecote excells on heavy equipment such as this Dredge Pump Casing where extensive buildups are required. Magnecote 301 restored size, Magnecote 302 provides an excellent final hard facing overlay.

This Crusher Jaw has manganese rounds tack welded in place to form corrugations, then entire face is rebuilt with Magnecote 301. Final passes of Magnecote 302 extend service life as much as 2 to 1 over new jaws.

Although best adapted to welding in down-hand position, the method is also applicable to inclined work by building a shelf and welding upwards.

Your Stoody dealer is now equipped to give you additional details and application help on Stoody Magnecote. Consult the yellow pages in your telephone book or write direct!

STOODY COMPANY

11976 EAST SLAUSON AVENUE • WHITTIER, CALIF.

Scows Built for "Shoehorn" Operations

Ease of operations in congested areas around marine construction and dredging jobs is the principal feature of two new bottom-dump scows. Capable of transporting 1,500 cu yd of high-density material, the new scows nevertheless are 40 ft shorter than previous vessels having the same capacity.

It is expected that the shorter length will make the scows easier to maneuver at the site of river, lake and harbor projects where dredges, derrick boats and other types of floating equipment are working.

The new scows are 186 ft long, 43 ft wide and 16 ft deep; the hold of each is divided into eight hopper compartments. Bottom doors are arranged so that each compartment may be opened individually, and each half of the double doors swings downward on hinges and fits flush against the side walls of the hull tunnel. The tunnel walls slope outboard so the doors, in effect, are recessed, safely away from the impact of falling rock and other material. This design, it is anticipated, will help prolong the life of the doors, which, on dump scows, are subject to severe abuse.

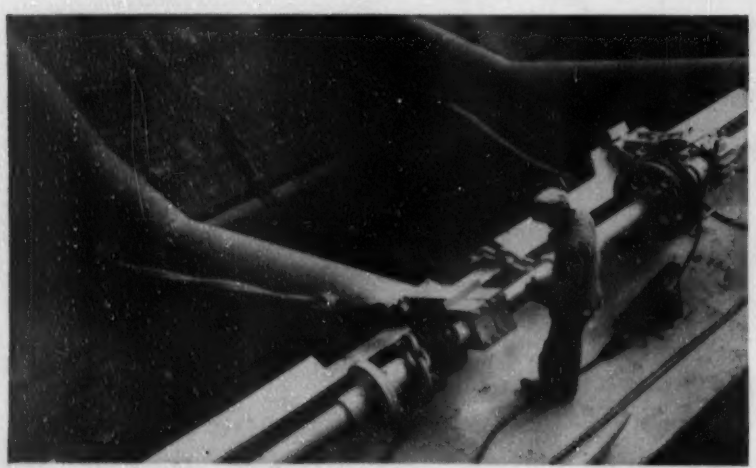
Each door is 5 ft 4 in. wide and approximately 18 ft long, fabricated of heavy steel plate and beams—replaceable timbers are installed as bumpers for main contact points on the doors. When the double doors of each hopper compartment are opened, they provide about 8½ ft of clear space for the cargo to drop through.

The customary method of door operation on dump scows involves use of heavy chains and cables fastened to each door half. The chain is wrapped around a shaft to which a wire rope drum and a ratchet are attached. The doors are closed by pulling the wire tope off the drum with a winch. This turns the shaft and winds fhe door chain around it. A pawl then is inserted in the ratchet to keep the shaft stationary.

According to the manufacturer of the new scows, a crewman opening the doors of an ordinary dump scow is subject to two hazards. First, he must use a sledge hammer to knock the pawl out of the ratchet. This may throw him off balance or cause his clothing to be caught in the spinning ratchet. Second, the wire rope which was pulled off the closing drum rapidly rewinds on the reel and whips and lashes dangerously around the deck.

To overcome these hazards on the new dump scows, a mechanical device has been designed that features the use of a lever to release the pawl from the ratchet. The release lever is interlocked with a jaw clutch for the closing drum so the drum automatically and simultaneously disengages from the shaft. This prevents the closing cable from being rewound on the drum by the spinning shaft as the doors drop open. The arrangement also eliminates the need for using a sledge hammer. The pawl, on the opposite side of the ratchet from the operator, is hinged so that it is drawn back away from the ratchet as the lever is moved.

Another feature of the vessels is the use of company-designed skegs on the stern to prevent side-slipping, or yawing, when the scow is towed on a line behind a tug in deep water. Dravo Corp., Neville Island, Pittsburgh 25, Pa.



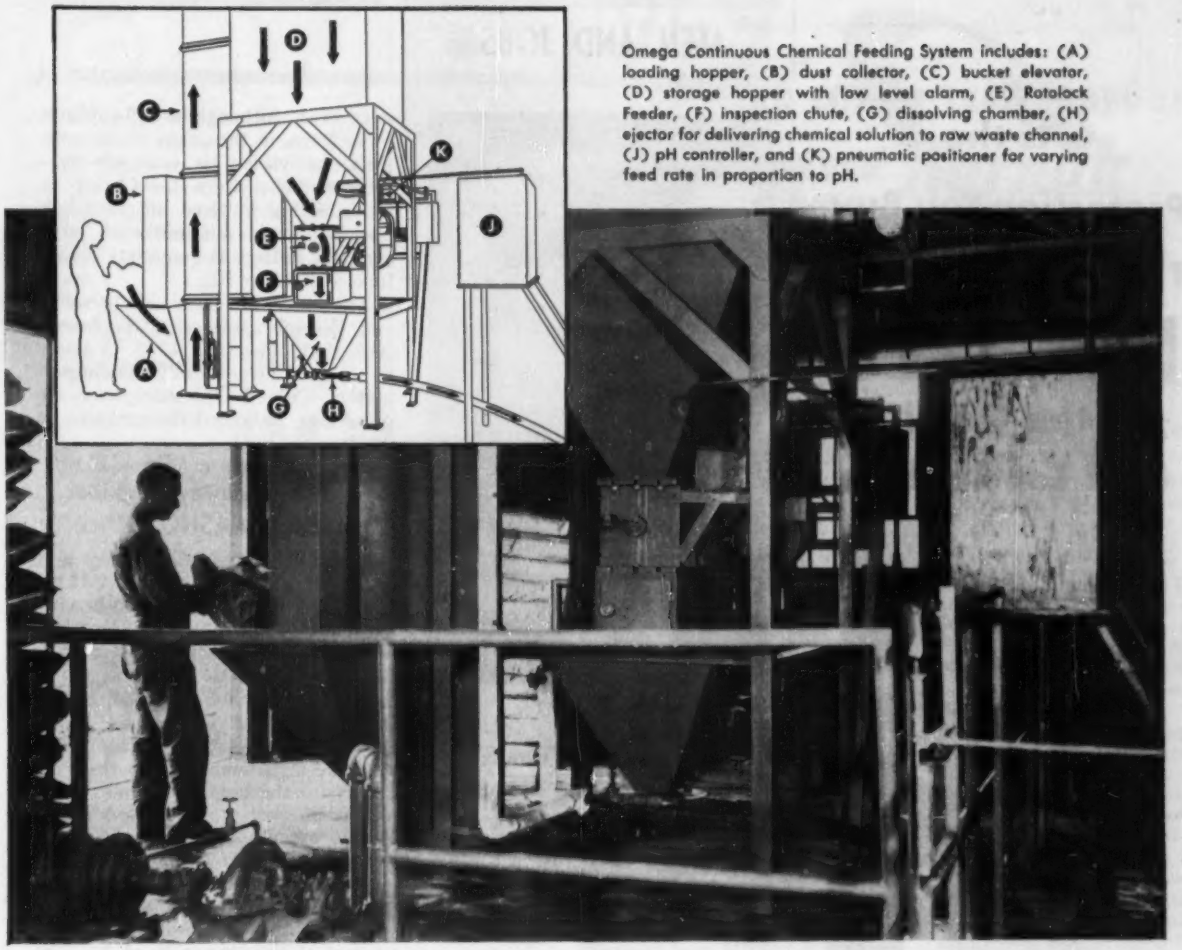
NEW DUMPING MECHANISM is said to eliminate many of the hazards associated with older methods. Recessed doors are protected against damage from falling rocks.

New Size Roof Decking Saves Installation Time

New 20-ft lengths of 30-in. wide roof deck are said to save time, require fewer welds and provide greater rigidity. This new decking covers a square with just two sheets.

The roof deck is made with 1¾-in. deep ribs on 6-in. centers with ⅜-in. bearing surfaces and top openings of only 1 in. Longitudinal joints are embossed to make them self-aligning, and all welding at erection is done from the top side. All decking is available in 18, 20, and 22 gauge thicknesses.

Information and engineering services, including deck layout, erection drawings, field assistance are available. Catalog 204. Airtherm Mfg. Co., 330 S. Spring Ave., St. Louis, Mo.



Omega Continuous Chemical Feeding System includes: (A) loading hopper, (B) dust collector, (C) bucket elevator, (D) storage hopper with low level alarm, (E) Rotolock Feeder, (F) inspection chute, (G) dissolving chamber, (H) ejector for delivering chemical solution to raw waste channel, (J) pH controller, and (K) pneumatic positioner for varying feed rate in proportion to pH.

CONTINUOUS WASTE NEUTRALIZING THE EASY, OMEGA WAY

WOLVERINE TUBE Division of Calumet & Hecla, Inc., at Decatur, Ala., uses this Omega Continuous Chemical Feeding System to neutralize acid pickle liquor wastes. As shown in the drawing, the system is a "load it, forget it" combination of standard Omega units engineered for continuous, automatic operation. Soda ash is fed by an Omega Rotolock Feeder in response to a pH Controller — at rates varying over a 15 to 1500 lbs. per hr. range. The Rotolock Feeder's high volumetric accuracy (within ± 1%) and wide range insure proper waste neutralization under all flow conditions.

This system was engineered in cooperation with Howard, Hickerson and Jordon, Engineers-Architects, of Nashville, Tenn. Omega welcomes the opportunity of working with you and your engineers in the application of Omega Feeders to your chemical feeding problems. Write for Bulletin 45-H8 and complete details. Omega Machine Company, 390 Harris Ave., Providence 1, Rhode Island.

OMEGA *THE LAST WORD IN* **FEEDERS**

DIVISION OF B-I-F INDUSTRIES, INC.

BUILDERS IRON FOUNDRY • PROPORTIONEERS, INC. • BUILDERS-PROVIDENCE, INC.

BIF METERS FEEDERS CONTROLS

Is the Protection You Buy TIME-TESTED Like TAPECOAT ...the Quality Coal Tar Coating

There is one dependable yardstick for measuring the quality of protective material: How does it stand up over years of service?

You don't have to experiment when you specify TAPECOAT. It is quality coal tar coating, and coal tar is nature's own defense against corrosion.

Since 1941, when it was introduced as the first protective coating in handy tape form, TAPECOAT has proved its ability to keep vulnerable steel surfaces in "like new" condition year after year. **That's why it is specified by those who know that continuing protection is the first consideration.**

For 13 years, TAPECOAT has provided dependable protection on pipe, pipe joints, tanks, etc., above ground and under ground.

TAPECOAT comes in handy rolls in widths from 2" to 24". It's easy to apply and the coal tar provides both bond and protection at the same time.

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MEN AND JOBS

Otto F. Sieder

New Job in Ohio Firm Goes To Officer in Top Command

H. K. Ferguson Co., Cleveland, Ohio, has promoted Otto F. Sieder to the newly-created post of vice chairman of the board. Wells N. Thompson succeeds Sieder as president.

Sieder joined the company in 1945 as executive vice president and general manager, and has been its president since 1953. Although he will continue to be active in the affairs of the company, he views his new job as a welcome relief from the "heavy responsibilities involved in the daily operations and administration of a company as large as Ferguson." (ENR June 5, 1952, p. 62).

Wells N. Thompson

Thompson has been vice president and general manager of Ferguson's New York office since 1946. A graduate of the University of Massachusetts and of Cornell University (civil engineering), he joined the company in 1921.

Arkansas Highway Engineer To Become AASHO Officer

Alfred E. Johnson will leave his post as chief engineer of the Arkansas Highway Department on Jan. 1 to become executive secretary of the American Association of State Highway Officials in Washington. He will succeed Hal H. Hale, who has resigned (ENR, Nov. 18, p. 23).

Johnson, a 27-year veteran of the highway department and its chief engineer for the last seven years, is the immediate past president of AASHO. As its executive secretary, he is expected to have a major role in promoting President Eisenhower's proposed federal highway program.

Born in Harrison, Ark., Johnson studied at the University of Arkansas and began work with the highway department in 1927 as an instrument man on local surveys. He later served as a rodman, draftsman, designer, resident engineer, office manager, assistant chief engineer, and as acting director for four months in 1953.

Besselievre Appointed Chief Of New Engineering Division

Edmund B. Besselievre has been selected to head up the newly organized industrial wastes division of Kaighin & Hughes, Inc., piping and mechanical contractors in Toledo, Ohio.

Formerly chief sanitary engineer of Dorr Company's international division in Stamford, Conn., Besselievre is recognized as one of the world's foremost authorities in the field of industrial wastes and sanitary engineering.

Born in Philadelphia in 1887, he has been active in sanitary engineering —both here and abroad—for nearly fifty years.

Besselievre is responsible for a number of inventions on equipment for sewage treatment, and has written

several books and numerous technical articles. His "Industrial Waste Treatment," published in 1952, is considered one of the best books in the field.

Kaighin & Jones will make the services of its industrial wastes division available to both government and industry.

Skidmore Owings & Merrill Holds Partnership Election

Skidmore, Owings & Merrill has appointed nine of its staff members to the partnership group.

New associated partners are Harold Olson, Jack D. Train and John O. Merrill, Jr. Those elected as participating associates are Natalie DuBois, Woody Dayton, Robert W. Henick, Bruce J. Graham, Alex Boome and William Dunlap.

Steel Fabricators Elect Earle Grover President

Earle V. Grover of Los Angeles was elected president of American Institute of Steel Construction, Inc. at its 32nd annual convention in White Sulphur Springs, W. Va. He succeeds John E. Jackson of Pittsburgh.

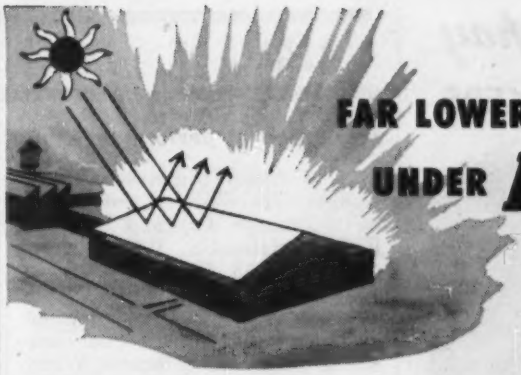
Grover is president of Apex Steel Corp., Ltd., which he founded in 1929 under the name of Atlas Iron Works.

Men and Jobs Briefs . . .

• **Careers**—Named as district engineers by the Bureau of Public Roads are: **C. F. Wyller** at Juneau, Alaska, and **M. M. Flint** at Missoula, Mont. . . . **Carroll F. Blanchard** becomes acting deputy chief engineer, New York State Department of Public Works. . . . **C. A. Stoldt** will be reappointed as Oklahoma's state highway director.

• **Associations**—Osborn Engineering Company's **Homer T. Borton** becomes president of Cleveland's Society of Professional Engineers. . . . **Malcolm S. Loring** named Boston district engineer of Portland Cement Assn.

• **Business**—American Telephone and Telegraph Co. has transferred **Howard E. Phillips** from Columbus, Ohio, to New York to become building engineer for the Bell system. . . . **Charles Bennett,** recently director of planning for Los Angeles, becomes an associate of Pereira & Luckman. . . . **H. Alfred Stalfort** has been elected vice president of Baltimore's Consolidated Engineering Co.



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An exclusive combination of flat aluminum flakes and specially prepared asphalt provides unique cooling and protective qualities. The asphalt penetrates, grips and weatherproofs. *The aluminum flakes flow to the surface and flatten into an opaque, metallic shield that reflects heat, ultra-violet, even infra-red rays thus preserving the underlayers of roofing.*

A heat lamp applied equally to an asphalt shingle or composition roofing, one half of which is coated with Karnak Aluminum-Asphalt Coating, *shows a temperature under the coated side 50° lower than under the uncoated side.* This lower temperature not only assures a cooler area under this surface but also protects the roofing. The test shows that high heat breaks down the roofing structure on the uncoated half thus shortening its life.

The liquid applies easily, as supplied in the container, by spray or brush. ***Manufactured by Lewis Asphalt Engineering Corp., 30 Church St., New York 7, N. Y.***

Look for the Warranty Seal

It guarantees 2 lbs. of aluminum pigment per gallon, assuring adequate aluminum to provide a good shield and hold it. Inferior coatings do not have this warranty.

50° LOWER BY TEST

Heat lamp application dramatically shows 50° lower temperature under the half of the shingle coated with Karnak Aluminum-Asphalt Coating.

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McConnaughay

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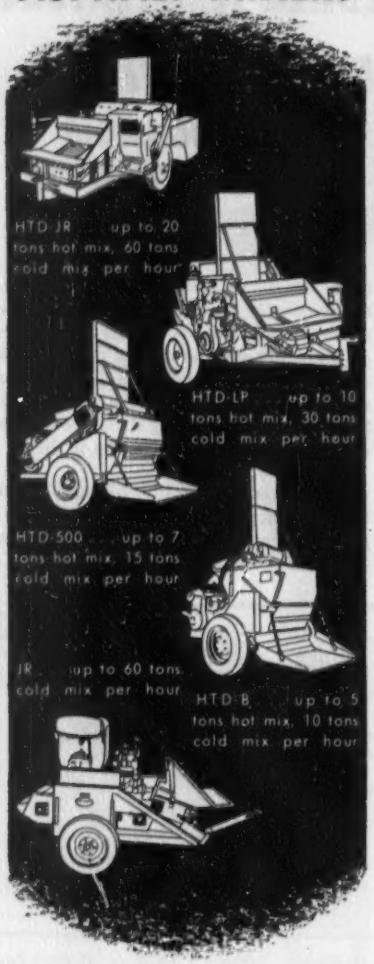
HTD-JR up to 20 tons hot mix, 60 tons cold mix per hour
HTD-LP up to 10 tons hot mix, 30 tons cold mix per hour
HTD-500 up to 7 tons hot mix, 15 tons cold mix per hour
JR up to 60 tons cold mix per hour
HTD-B up to 5 tons hot mix, 10 tons cold mix per hour

. . . for resurfacing and patching in any season

DESIGNED for economy of operation and fast production, the McConnaughay line of Multi-Pug Asphalt Mixers meets every need for most resurfacing as well as all types of pavement patching. Working on location, these mixers provide the exact amounts of materials needed (never too much or too little); and McConnaughay HTD models are the only mixers which effectively remove both moisture and solvents from bituminous mixtures . . . positive assurance that patches and resurfaced areas will set up hard. Write, wire or 'phone for details and specifications.

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LAFAYETTE, INDIANA

LEGAL

Prevention of performance

"Prevention of performance by the promisee is equivalent to performance by the promisor. Crawford v. Pioneer Box & Lumber Co., 105 Cal. App. 760, 769, 288 P. 696; Sexton v. Richardson, 6 Cal. App. 459, 92 P. 395. * * * A party to a contract cannot take advantage of his own act or omission to escape liability thereon. Where a party to a contract prevents the fulfillment of a condition precedent or its performance by the adverse party, he cannot rely on such condition to defeat his liability. Overton v. Vita-Food Corp., 94 Cal. App. 2d 367, 374, 210 P. 2d 757."[1]

An interesting application of the above principle of law was involved in a case in which several contractors who had had no experience in subway work were interested in submitting a bid for a subway contract. They made an agreement with an engineer who had had considerable experience in subway construction whereby the engineer was to prepare an estimate of the cost of the job which would be used in computing their bid for the job.

The engineer prepared the estimate, the contractor submitted the bid and the bid was the lowest of those submitted. One of the prerequisites of being awarded the contract was that the low bidder had to submit a financial statement showing liquid assets to the extent of 10% of the amount of the bid. Between the time that the bids were opened and the date set for submitting the financial statement, differences arose between the three contractors interested in the proposed job, with the result that they decided that they did not want the job. In order to accomplish this purpose, they deliberately submitted an insufficient financial statement as a result of which the bid was rejected.

The agreement with the engineer was to the effect that if the contract was awarded to them, they would employ him as the engineer to supervise the job and in addition pay him 25% of the profits earned. Upon the refusal of the contractors to pay the engineer for preparing the estimate, an action was brought to recover 25% of the profits the contractor group would have earned had it obtained the job, the engineer contending that the contractors, by their own acts, had prevented the group from obtaining the job and earning the alleged profits.

The case was dismissed by the trial court on the ground that no contract had been awarded and no profits earned. An appeal was taken to the Appellate Division, which reversed the judgment of the trial court and ordered a new trial.[2] The Appellate Division sustained the engineer's contention that the contractors by their own act prevented the group from obtaining the job and earning a profit. The court indicated that if the jury found as a fact that the contractor did not get the job because it deliberately submitted a false financial statement, then the engineer is entitled to recover his share of the profits called for by the contract. The case thereafter was settled out of court.

(1) Unruh v. Smith, 267 P. 2d 52, District Court of Appeal of California, Feb. 24, 1954. (2) Beer v. Decker, 251 N.Y.S. 922.

Right to reform bid

An invitation for bids provided that if a bidder claimed he had made a mistake in his bid, such mistake should be called to the attention of the city's commissioner within 48 hours after opening of bids.

With the above provision in the invitation to bidders, a contractor entered into a contract to perform certain work. He later discovered he had made a mistake in his bid, but proceeded with and completed the contract. He then brought an action to reform the contract so he could recover the loss sustained.

The court denied the contractor any recovery,[1] holding that in the absence of fraud on the part of the city, the contractor was not entitled to have the contract reformed so as to increase the unit prices contained in the bid and the contract.

The court stated: "It is plaintiff contractor which submits the bid, wins and signs the contract at the amount given therein for the work to be done, which risks any resultant loss. The city is entitled to the bargain obtained in accepting the lowest bid. It is under no obligation to examine the bids to ascertain errors and to inform bidders thereof. If the bid appears too high it becomes the duty of the city's officer or agent, as a matter of obvious duty, to call same to the attention of the bidders. The city's interest is to obtain and accept the lowest bid from a contractor financially responsible and otherwise competent."

(1) Heating & Maintenance Corp. v. City of New York, 129 N.Y.S. 2d 466, Supreme Court, New York County, March 19, 1954.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

OBITUARIES

Fred Mehlen, 61, building superintendent for Landor Construction Co., Canton, Ohio, died Nov. 6.

Walter Johannessen, 63, senior partner in the Phoenix, Ariz., consulting engineering firm of Johannessen & Girand, died Nov. 14. He was responsible for preparation of plans and specifications for many of Arizona's developments, including the multi-million-dollar expansion of Phoenix Sky Harbor Airport.

Edward J. Kilmer, Sr., retired building contractor of Albany, N. Y., died Nov. 17.

James H. H. Muirhead, 88, East Patchogue, Long Island, N. Y., who retired in 1952 after a 65-year career as an engineer and cartographer, died Nov. 20. He had been bridge engineer for Columbian Pacific Railroad in South America; inspector for the Isthmian Canal Commission during the building of the Panama Canal; engineer during construction of the port of Para, Brazil, and construction of Havana harbor.

Edgar M. Hastings, retired chief engineer of the Richmond, Fredericksburg & Potomac Railroad, died in Richmond, Va., Nov. 21. Hastings, who spent his entire professional career in railroad engineering, started with the RF&P in 1903 and became chief engineer in 1922.

Gordon F. Daggett, 65, Shorewood, Wis., designing engineer for Modern Equipment Co., died Nov. 1. He received his civil engineering degree from the University of Wisconsin, and at one time was with the Smith Engineering Works.

Harry A. Luzier, 72, Youngstown, Ohio, city engineering department inspector, died Nov. 10. He formerly served as superintendent of Turner Construction Co. for a period of 30 years.

George Nelson, 79, general contractor of Seattle, died Nov. 21. He attracted nation-wide attention 30 years ago by using a conveyor belt to remove Denny Hill, which had been hindering growth of the city's business district.

Otto F. Kopitke, 80, former Toledo, Ohio, building contractor, died Nov. 25. Before retiring in 1939, he headed Kopitke Construction Co.

"They tilted 30,000 tons of concrete..."

This unique ore-loading wharf designed in Plastiment-concrete by Frederic R. Harris, Inc., Consulting Engineers of New York, for the Aluminum Company of Canada's gigantic Kitimat project, was cast on its side, floated into place and tilted 90° into final position.

Floating Plastiment-concrete structures are not new. . . . Of the seven American projects featured as Famous Floating Concrete Structures in the May issue of the Journal of the American Concrete Institute, five were constructed of Plastiment-concrete . . . most of the foreign jobs shown also contained Plastiment, supplied from the fourteen overseas Sika manufacturing organizations.

While you may not be designing a floating concrete pier, the special qualities that made this concrete denser, more uniform, and more resistant to cracking and abrasion are undoubtedly a must in your own construction projects. Performance has proven that Plastiment can help you attain this goal.

For the story on the Kitimat project, plus a detailed explanation of Plastiment's exclusive action on cement gels, write for your copy of Sika Job 14 and the illustrated brochure "PLASTIMENT CONCRETE DENSIFIER." Our Engineering Department will be glad to tell you how Plastiment can help you on your present job.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

SOON LETS CONTRACT—BUILDINGS

R. I., Providence — TELEPHONE BLDG. — New England Telephone & Telegraph Co., 185 Franklin St., Boston, Mass., soon lets contract telephone bldg. addn., Washington St. $650,000. Howe, Prout & Ekman, 17 Custom House St., archts. CD 3/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NEW HAMPSHIRE—State Dpt. P. Wks. & Hys., Concord, W. H. Hinman, Inc., North Anson, Me., LB $810,299, road mix and bit. macad. 2.197 mi. four-lanes; 240 ft. 4-span steel beam bridge, Dover. Bids Dec. 2. R. H. Whitaker, c/o owner, const. engr.

BUILDINGS

LOW BIDS AND CONTRACTS

C. Profenno Co., 127 Marginal Way, Portland, Me. CA $599,100, est. $550,000. HIGH SCHOOL Stroudwater St., WESTBROOK, ME. City, City Hall, Westbrook, Me. CD 11/1, under LB.

▲ Norwood Properties, Inc., c/o Joseph H. Rosenshine, 161 Devonshire St., Boston, Mass. Owner Builds. Separate Contracts. $8,000,000. (1st. section 600 RESIDENCES), NORWOOD-WESTWOOD, MASS. Lester N. Lechter, 739 Boylston St., Boston, Mass., designer. CD 7/19.

Thomas Constr. Co., 93 Austin Ave., East Haven, Conn., LB, $698,000, HIGH SCHOOL, Geer St., CROMWELL, CONN. Town, Roger F. Summ, chn. School Bldg. Comn., 463 Main St., Cromwell, Conn. Bids Nov. 30. CD 11/8.

▲ Larson & Son, 34 Peach Tree Rd., Glastonbury, Conn., Owner Builds. $2,500,000, RESIDENTIAL tract, Fernciff Dr., Avon Mountain, 40-acre tract, WEST HARTFORD, CONN.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲ Md., Baltimore—HOUSING—BA 12/22—Baltimore Housing Auth., 789 E. Eager St., exten. Cherry Hill Housing, 53 two story, bsmnt. dwellings, 362 units, $3,750,000. Plans deposit $100. Taylor & Fisher, 1012 N. Calvert St., archts. Egli & Gompf, 1019 N. Calvert St., mech. engrs. CD 7/24/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Atlantic Gulf & Pacific Co., 15 Park Row, New York, N. Y., LB $749,170, placement of sand fill by hydraulic dredge on east shore of Staten Island, Richmond Co., NEW YORK. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Dec. 2. CD 11/16.

† Lizza & Sons, Inc., 21-23 Orchard St., Oyster Bay, N. Y., CA $491,179, storm drainage facilities, Mitchel Air Force Base, MITCHEL FIELD, N. Y. U. S. Eng. 80 Lafayette St., New York 13, N. Y. Bids Nov. 9. CD 10/20.

PENNSYLVANNIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Union Paving Co., 1227 N. Broad St., Phila. 22, Pa. CA $634,992, constr. 0.46 mi. divided hy., plain c. conc. base with bit. surf. variable 25.06 ft. to 32.08 ft. wide on each side of a 4-ft. wide concrete divisor, between Benjamin Franklin Parkway and 15 to 20 Sts., pave all intersecting streets and certain parallel streets with plain c. conc. base and bit. surf: Leg. Rt. 67005. Philadelphia Co. Bids Nov. 19. CD 11/34, under LB.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
Wright Contg. Co., Box 1850, Columbus, Ga. LB $705,516. dual 3 span continuous steel girder bridges 3 bridges, Anacostia River, Contr. P 695-1-320, Prince George Co.;
Ralph E. Mills Co., Inc., Salem, Va. LB $143,166. dual 3 span steel I-beam bridge over Cedar Lane Rock Creek Park, Contr. M 512-3-320, Montgomery Co. Bids Nov. 30. CD 11/24.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
F. P. Asher Jr. & Sons Co., 1715 West St., Annapolis, Md. LB $504,100. grading, drainage, wid'n., relocation, surf. 5.736 mi. State Rte. 33, Romancoke to Matapeake, Contr. Q 295-1-220, Queen Anne Co. Bids Nov. 30. CD 11/24.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Cariste Constr. Co., 26 Court St., Brooklyn 2, N. Y. CA $1,136,000, general contract PUBLIC SCHOOL 220 Yellowstone Blvd. and 62nd Rd., Queens Boro, NEW YORK. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Oct. 26. CD 10/28, under LB.

▲ Planet Constr. Corp., 11 W. 42 St., New York 36, N. Y. CA $1,155,000, general constr. PUBLIC SCHOOL 21, Chauncey St. and Patchen Ave., BROOKLYN, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Nov. 8. CD 11/10, under LB.

George F. Driscoll Co., 41 E. 42 St., New York 17, N. Y. CA $730,000. 1 story, 80x313 ft. STORE, Parsons Blvd., northwest corner of Jewel Ave., 1 story, 150x515 ft. store, Parsons Blvd., southeast corner Jewel Ave., FLUSHING, N. Y. J.I.B. Realty Corp., c/o A. H. Salkowitz, archt. 37-60 82 St., Jackson Heights, N. Y. CD 3/17.

▲ Knickerbocker Knolls Homes, c/o Katz, Waisman, Blumenkranz, Stein & Weber, archts., 551 Fifth Ave., New York, N. Y., Owner Builds. $7,000,000. 403 HOUSES, 112-acre tract on Walt Whitman Rd., north of Northern State Parkway, HUNTINGTON, N. Y.

Frank McNamara, c/o Henry Johanson, archt., 2 Main St., Rosiyn, N. Y. Owner Builds. $900,000. 23 HOUSES, near Cherry Hill School, KINGS POINT, N. Y.

John Rosenblum, Inc., 1860 Broadway, New York 23, N. Y. CA $754,000, general constr. Long Island City HIGH SCHOOL, 41 Ave. and 29 St., Queens Boro, LONG ISLAND CITY, N. Y. Bd. Educ., Bureau Constr. 42-15 Crescent St., Long Island City 1, N. Y. Bids Oct. 13. CD 10/19, under LB.

▲ George A. Fuller Co., 597 Madison Ave., New York 22, N. Y. CA Approx. $15,000,000. 30 story air-conditioned OFFICE, Park Ave. between E. 55 and E. 56 Sts. to be called 425 Park Ave., NEW YORK, N. Y. Syndicate, c/o George J. Engler, 307 Seventh Ave., New York, N. Y. Kahn & Jacobs, 2 Park Ave., New York 16, N. Y., archts.

▲ Grayco Builders, 106-21 Continental Ave., Forest Hills, N. Y., CA $1,235,000, PUBLIC SCHOOL 130, Prospect Ave. and E. 156 St., NEW YORK, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Nov. 5. CD 11/10, under LB.

▲ Stratford Organization, c/o Gale Oppenheimer, 113 W. Sunrise Hy., Freeport, N. Y. Owner Builds. $3,500,000. 127 HOUSES, 62-acre tract, Willis Ave. and Northern State Parkway, ROSLYN HEIGHTS, N. Y.

▲ Foxwood Homes, c/o Gale Oppenheimer, 113 W. Sunrise Hy., Freeport, N. Y. Owner Builds. $1,750,000. 135 HOUSES, tract on Higbie Lane, WEST ISLIP, N. Y.

▲ David Warren Constr. Co., 370 Montgomery Ave., Merion, Pa., Separate Contracts. $3,500,000. RESIDENTIAL DEVELOPMENT, Sydney St., PHILA., PA. Jack Swerman, 405 Market St., Chester, Pa., archt.

▲ Severn River Constr. Co., 2 W. University Parkway Baltimore 18, Md. Owner Builds. $2,400,000. 266 brick HOUSES, Boro Rd., Niagara Court, Fredonia Court, Riverview Development, BALTIMORE, MD.

▲ Charles E. Smith Co., Southern Bldg., Wash., D. C., CA, $3,500,000, 216-unit APARTMENT, 29 and Cleveland Ave. N.W., WASH., D. C. Shoremede Corp., 619 Southern Bldg., Wash., D. C. Corning & Moore, 1726 M St. N.W., Wash., D. C., archts.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $92,000; other buildings $300,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

SOUTH

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

FLORIDA—State Road Dpt., Tallahassee,
Brinson Constr. Co., Box 2209, Tampa, Fla., CA, $896,107 rock base with bit. surf. tr., b. conc., one concrete box culvert, small drainage structures 11.166 mi. State Road 43, S-302 (3), Job No. 1302-202 and Job 1302-104, Manatee Co. Bids Oct. 19, awarded Nov. 23. CD 10/26, under LB.

▲ KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort,
R. B. Tyler Co., 1446 Lewering St., Louisville, Ky., and Breslin Constr. Co., 1433 S. Preston St., Louisville, Ky. CA $2,127,583. Contr. 13, grading, drainage approx. 2.8 mi., paving 2.8 mi. and three 3-span and one 4-span continuous rein.-con. structures in Design Sect. C, of Kentucky Turnpike Proj. No. 1, Jefferson Co. CD 11/19, under LB.

▲ Virginia Engineering Co., 29 St. at James River, Newport News, Va. CA $4,943,000. general contract Phase 1,
Henderson & Marine Electric Assn., Crittenden Dr. and Phillips Lane, Louisville, Ky. CA $1,041,583. electrical work for Phase 1 and 2;
Ward Refrigeration & Engineering Co., 620 W. Kentucky St., Louisville, Ky. CA $1,001,526. heating and ventilating work for State Fair and Exposition Center, LOUISVILLE, KY. State Property & Buildings Comn., Div. Engineering, Frankfort, Ky. Grand total $6,986,-109. CD 9/21 and 10/19, under LB.

▲ Robert Simmons Constr. Co., 840 Barrett Ave., Louisville, Ky. CA $1,516,000. general contract Phase 2, stadium and stables, for State Fair and Exposition Center, LOUISVILLE, KY. State Property & Buildings Comn., Div. Engineering, Frankfort, Ky. CD 9/28, under LB.

▲ TENNESSEE—State Hy. Dpt., Nashville,
Anderson-Gregory, Cotton States Bldg., Nashville, Tenn., LB $90,790, crushed stone surf. 3.282 mi. Sect. Secondary Rte. 4352. Proj. No. S-4352 (1), Sequatchie Co.;
Bass Bros., Shelbyville, Tenn., LB $97,111, crushed stone surf., constr. concrete box type bridge 3.911 mi. sect. Secondary Rte. 4264, Proj. No. S-4264 (2), Bledsoe Co.;
Bullard Bros., Newport, Tenn., LB $291,681, bit. materials paving 11.242 mi. of south lanes, sect. St. Rte. 34, Proj. No. F-034-1-(23), Jefferson Co.;
Harrison Constr. Co., Maryville, Tenn., LB $357,292, bit. materials paving 7.165 mi. sect. St. Rte. 71, Proj. No. F-045-1-(7), Sevier Co.;
Interstate Constr. Co., 3rd Natl. Bank Bldg., Nashville, Tenn., LB $83,534, crushed stone surf. 4.489 mi. sect. Secondary Rte. 4361, Proj: No. S-4361 (1), DeKalb Co.;
A. B. Long, Harriman, Tenn., LB $79,664, wid'n., resurf., const. curb, gutter, sidewalks 0.22 mi. sect. St. Rte. 1 (Race St.) in Kingston, Proj. SAMP-223-A, Roane Co.;
R. E. Martin, W. Melrose Bldg., Nashville, Tenn., LB $91,402, crushed stone surf. 4.107 mi. sect. Secondary Rte. 4412, Proj. No. S-4412 (1), Marion Co.;
McDowell & McDowell, 718 Murfreesboro Rd., Nashville, Tenn., LB $95,655, crushed stone surf. 2.915 mi. sect. Secondary Rte. 4252, Proj. No. S-4252-(3), Cumberland Co.;
Cecil Morgan, Clarksville, Tenn., LB $63,790, grav. or chert surf., constr. two box type bridges 4.485 mi. sect. Secondary Rte. No. 8160, Proj. No. S-8160 (1), Henry Co.;
Paul B. Murphy, Cumberland Furnace, Tenn., LB $69,986, grav. or crushed stone surf. 4.126 mi. sect. Secondary Rte. 4231, Proj. No. S-4231 (3), Clay Co.;
Road Builders, Inc., 718 Murfreesboro Rd., Nashville, Tenn., LB $263,881, wid'n., constr. curb, gutter, sidewalks, storm drainage 2.044 mi. St. Rte. 24, Proj. No. SAMP-221-A, Wilson Co.;
S. & W. Constr. Co., Shrine Bldg., Memphis, Tenn., LB $1,279,783, c. conc. and bit. materials paving, constr. overhead over Yale Yards of St. Louis-San Francisco

(Continued on page 66)

NEW CHEVROLET TRUCKS

keep going longer, keep going for less!

From the day you first put it on the job until the time comes to trade, your Chevrolet truck's going to do more work for you while you spend less to keep it going. Here's why you can count on it—

INCREASED POWER SAVES YOU PLENTY

Chevrolet's high compression ratio (in each of its three great engines) develops more power. That means you go longer before filling the tank! It means, too, you've got extra power handy whenever you need it—for greater acceleration, for an easier pull up steep grades, for steadier going through mud and sand on off-the-road jobs. So, you save not only on operating costs—you save *time* as well.

GREATER RUGGEDNESS PAYS OFF IN LONGER LIFE

Two-ton models, for example, are equipped with heavier axle shafts. All models have newly designed clutches and stronger frames. The best part of it is that, throughout their longer life, you spend less for their upkeep. For complete details about the model you need, see your Chevrolet dealer. He'll tell you whatever you want to know, then give you the best news of all: Chevrolet trucks are priced lower than all other lines! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

MOST TRUSTWORTHY TRUCKS ON ANY JOB! CHEVROLET

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

THREE GREAT ENGINES—The new "Jobmaster 261" engine* for extra heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. **NEW TRUCK HYDRA-MATIC TRANSMISSION***—offered on ½-, ¾- and 1-ton models. Heavy-Duty **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **DIAPHRAGM SPRING CLUTCH**—improved-action engagement. **HYPOID REAR AXLE**—for longer life on all models. **TORQUE-ACTION BRAKES**—on all wheels on light- and medium-duty models. **TWIN-ACTION REAR WHEEL BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—greater holding ability on heavy-duty models. **NEW RIDE CONTROL SEAT***—eliminates back-rubbing. **NEW, LARGER UNIT-DESIGNED PICKUP AND PLATFORM STAKE BODIES**—give increased load space. **COMFORTMASTER CAB**—offers greater comfort, convenience and safety. **PANORAMIC WINDSHIELD**—for increased driver vision. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—easier, safer handling. **ADVANCE-DESIGN STYLING**—rugged, handsome appearance.

**Optional at extra cost. Ride Control Seat is available on all cabs of 1½-, and 2-ton models, standard cabs only in other models. "Jobmaster 261" engine available on 2-ton models, truck Hydra-Matic transmission on ½-, ¾- and 1-ton models.*

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LIGHTWEIGHT
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AUTOMATIC
DRAGLINE BUCKETS
CLEARING
POST OFFICE
CHICAGO 38,
ILL.

(Continued from page 64)

Ry. in Memphis on Airways Bldg., 2.02 mi. Proj. No. U-069-1-(1), Shelby Co.;
Southern States Paving Co., 900 44th Ave. N., Nashville, Tenn., LB $254,560, bit. materials resurf. 1.623 mi. St. Rte. 6, Proj. No. SAMP-224-A; wid'n. and bit. materials resurf. 8.037 mi. sect. State Rte. 6, Proj. No. SAP-1121-A, Lawrence Co.;
West Tennessee Constr. Co., Alamo, Tenn., LB $101,367, crushed stone or grav. surf. 8.793 mi. sect. Secondary Rte. 8099, Proj. No. S-8099 (2) Gibson and Obion Counties; LB $310,751, soil-cement and bit. materials surf. constr. two bridges 6.801 mi. sect. St. Rte. 22, Proj. No. F-022-3-(1), Henderson Co. Bids Dec. 3. CD 11/16.

BUILDINGS
LOW BIDS AND CONTRACTS

Clark Constr. Co., 1919 Parrish Ave., Owensboro, Ky. CA Est. $500,000. 76x460 ft., steel, concrete mfg. PLANT, 300 ft. tunnel Kiln, LEWISPORT, KY. Murray Tile Co., Cloverport, Ky. CD 9/9.
† **L. E. Stevens Co.**, 525 W. 6 St., Newport, Ky., CA $447,589. constr. test fuel sys., TEST FUEL BLDG. and UTILITIES SHELTER, 1 story, 27x59 ft. with 1-ft. rein.-con. walls, at Arnold Engineering Development Center, TULLAHOMA, TENN. U. S. Eng., Tullahoma, Tenn. CD 11/14/49

MIDDLE WEST

BIDS ASKED—BUILDINGS

▲ **Ind., Clarksdale**—SCHOOLS—BA 12/21—City, City Hall, 2 story, no bsmnt., Junior and Senior High School. $1,200,000. Plans deposit $75. Arrasmith & Tyler, Madrid Bldg., Louisville, Ky., archts.
▲ **Wis., Janesville**—COURT HOUSE, etc.—BA 1/19—Rock Co., Court House, Janesville, court house office bldg. $1,665,000. Carl Lloyd Ames, 3625 A. W. North Ave., Milwaukee, archt. R. Strauss, 225 E. Michigan Ave., Milwaukee, structural engr. CD 8/3.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15, **The Ohio Eng. Co.**, 105 Sixth St., Lorain, O., CA $739,365, est. $798,500, Type T-35 and structures 3.487 mi. U. S. R. 20, Sections (11.72-15.15), Lorain Co.; **D. R. Smalley & Sons, Inc.**, 436 W. Market St., Celina, O. CA $1,351,675, est. $1,444,600. Parts 1 and 3, Part No. 1, Type T-71 and T-35 1.477 mi. City of Springfield; Part No. 3, Type T-71 and structure, City of Springfield, U. S. R. 40, Sections (10.83-11.82), U. S. R. 40DA, Sect. 0.00; U. S. R. 40, Sections (13.43-14.10); U. S. R. 40DA, Sections (1.59-1.68), U-556 (9), U-UG-556 (6), Clark Co. Bids Nov. 23. CD 12/2, under LB.

▲ **INDIANA**—Indiana Toll Road Comn., 309 W. Washington St., Old Trails Bldg., Indianapolis, Zone 4, **Arcole-Midwest Corp.**, 3225 Main St., Evanston, Ill., CA, $5,252,581, constr. 6.3 mi. section Contracts 28, 29 and 30, Indiana East-West Toll Road, St. Joseph Co. Bids Nov. 17. CD 11/19, under LB.

▲ **INDIANA**—Indiana Toll Road Comn., 309 W. Washington St., Old Trails Bldg., Indianapolis, **Western Contg. Corp.**, 400 Benson Bldg., Sioux City, Ia., LB, $7,408,867, Contract C-33/34, C-35, C-36/37 for Indiana East-West Toll Road, Elkhart Co. Bids Dec. 1. CD 11/9.

Holloway & Thompson Constr. Co., 29350 Joy St., Livonia, Mich. LB $504,338. relief and storm sewers, Contr. No. 1, JACKSON, MICH. City, Lloyd Head, purch. agt., City Hall, Jackson, Mich. Bids Nov. 30. CD 11/11.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **Edward Rose**, 14900 Linwood St., Detroit, Mich., CA, Approx. $2,500,000. 103 colonial type brick HOUSES, Centerville Forest Housing Development, near DAYTON, O. Major Webb & Paul Shawhan, c/o George P. Huffman & Co., 41 E. 1 St., Dayton, O.

▲ **Knowlton Constr. Co.**, 106 N. Main St., Bellefontaine, O., CA, $1,711,150. 7 story HOSPITAL addn., ZANESVILLE, O. Bd. Trustees, Good Samaritan Hospital, 1247 Ashland Ave., Zanesville, O. Awarded Nov. 26. CD 8/4/53.

Tonn & Blank, Inc., 104 N. Franklin St., Michigan City, Ind., CA Est. $800,000. FACTORY, MICHIGAN CITY, IND. Schell Mfg. Co., Inc., 213 W. Schiller St., Chicago 10, Ill. Bids Nov. 8. CD 10/19.

▲ **P. A. Laurence Co.**, Builders Exchange Bldg., Minneapolis, Minn., CA, $1,500,000, 350-ton capacity RECOVERY FURNACE and one boiler, etc., PORT EDWARDS, WIS. Nekoosa-Edwards Paper Co., Port Edwards, Wis. CD 8/17.

▲ **Barnes Constr. Co.**, 1310 Wallen St. S.W., Grand Rapids, Mich. CA $1,200,000. 2 women's DORMITORIES, Susanna Wesley Hall, ALBION, MICH. Albion College, W. W. Whitehouse, pres., Albion, Mich. CD 10/1.

John C. Westphal, 12274 Coyle St., Detroit, Mich. CA Est. $600,000. Ralph Johnson Bunche Elementary SCHOOL, DETROIT, MICH. City, Bd. Educ., 1354 Broadway, Detroit, Mich. Bids Nov. 22. CD 11/11.

▲ **Darin & Armstrong, Inc.**, 2041 Fenkell St., Detroit 38, Mich. CA $1,348,870. elementary SCHOOL, Stratford and Pearson Sts.; elementary SCHOOL, Church and Dartmouth Sts.; Clinton Elementary SCHOOL, OAK PARK, MICH. City, Louise Shaw, city clk., Oak Park, Mich. CD 11/24, under LB.

Bruton Realty Co., 15100 Fenkell St., Detroit, Mich. Owner Builds. $700,000. Centennial Farms Development, 60 brick HOMES, Ten Mile Rd. and Centennial St., ST. CLAIR SHORES, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Nebraska**—TRANSMISSION LINE—BA 1/6—Bureau Reclamation, Dpt. Interior, Sargent, furnishing labor and materials for Gavins Point-Belden, 115-kilovolt transmission lines, Transmission Div., Missouri River Basin Proj., Gavins Point Switchyard (proposed) to Belden Sub-station, near Belden, Cedar Co., Spec. DC 4302.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲ **MISSOURI**—State Hy. Dpt., Jefferson City, **Porter DeWitt Constr. Co., Inc.**, P. O. Box 279, Poplar Bluff, Mo. LB $2,329,480. graded earth, two 24 ft. c. conc., Pulaski Co.; LB $266,066. graded earth two 24 ft. c. conc. 0.965 mi., Laclede Co.;
J. A. Tobin Constr. Co., 3700 Rainbow Blvd., Kansas City, Kan. LB $780,102. two 24 ft. c. conc. 2.218 mi. Clay Co.;
John R. Burton, Montgomery City, Mo. LB $100,489. grav. or crushed stone surf. 13.956 mi. Ralls Co.;
Payne & Dolan, Inc., 735 N. Water St., Chicago, Ill. LB $328,888. b. conc. 8.053 mi. Cooper Co.;
Ray & Son, Inc., Louisiana, Mo. LB $126,048. grav. or crushed stone surf. St. Charles Co.;
J. M. Roark Constr. Co., Anderson, Mo. LB $60,119, grav. or crushed stone surf. 5.367 mi., McDonald Co.;
Steinhoff-Kirkwood-Jorner, Box 205, Advance, Mo. LB $76,605. granular surf. 9.52 mi. Cape Girardeau Co. Bids Dec. 2. CD 11/17.

FAR WEST

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲ **Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York, N. Y. and **Savin Constr. Corp.**, 10 Village St., East Hartford, Conn. LB $14,731,000. Est. $17,000,000. constr. Gorge High Dam on Skagit River, SEATTLE, WASH. City, County-City Bldg., Seattle 4, Wash. Bids Dec. 1. CD 11/4.

BUILDINGS
LOW BIDS AND CONTRACTS

R. J. Daum Constr. Co., 6803 West Blvd., Inglewood, Calif., CA, $963,500, est. $750,000, BAKERY PLANT, BELL GARDENS, CALIF. Langendorf United Bakeries, 1870 W. 62 St., Los Angeles, Calif. Bids Nov. 19, awarded Nov. 30. CD 12/2, under LB.
L. S. Whaley Co., 5512 Britton Dr., Long Beach, Calif., Owner Builds, $925,000, concrete, stone veneer DEPARTMENT STORE, 2100 Bellflower Blvd., LONG BEACH, CALIF.
▲ **L. E. Dixon Co.**, 409 S. California St., San Gabriel, Calif., CA, $4,238,193, Cement PLANT, MOJAVE, CALIF. California Portland Cement Co., 612 S. Flower St., Los Angeles, Calif. Bids Nov. 16, awarded Nov. 30. CD 11/22, under LB.
Hickman Co., 180 St. and Hickman Dr., Torrance, Calif., Owner Builds, $695,900. 70 frame, stucco DWELLINGS, Avis and Osage Aves., TORRANCE, CALIF.

CANADA

SOON LETS CONTRACT—BUILDINGS

▲ **Ont., Brantford**—BA 1/8—Grand River Conservation Comn., Box 605, flood water storage dam at Glen Allan, 1800 ft. in overall width, base to bedrock 10 ft. below Conestogo River bed, crest of dam to have 20 ft. roadway and 3 gates, $5,400,000. Plans deposit $50. H. G. Acres & Co. Ltd., 2135 Culp St., Niagara Falls, engrs. CD 5/13/53.

SOON LETS CONTRACT—BUILDINGS

Que., Montreal—SYNAGOGUE, etc.—Congregation Cheura Hadisha, 5213 Hutchison St., soon lets contract synagogue, school and auditorium, $500,000. Greenspoon, Freedlander and Dunne, 4151 Sherbrooke St. W., Montreal, archts. CD 12/10/53.

BUILDINGS
LOW BIDS AND CONTRACTS

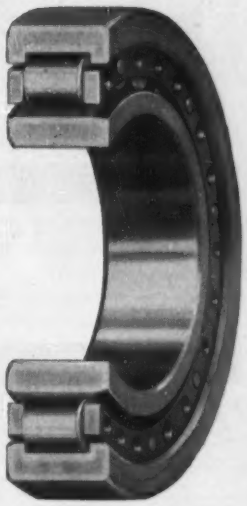
▲ **J. L. E. Price & Co. Ltd.**, 4664 St. Catherine St. West, Montreal, Que., CA, Est. $1,500,000, HOME for the AGED, ST. JOHN'S, NEWFOUNDLAND, Roman Catholic Episcopal Corp., St. John's, Newfoundland. Awarded Nov. 30. CD 6/15, under Public Buildings.

Pigott Constr. Co. Ltd., Pigott Bldg., Hamilton, Ont., CA, $550,000 56-bed HOSPITAL WING, NEWMARKET, ONT. York County Hospital Bd., 100 Main St., Newmarket, Ont. Bids Nov. 8, awarded Dec. 1. CD 10/22.
Curran & Herridge Constr. Co., Ltd., 283 Confederation St., Sarnia, Ont. CA Est. $800,000. REFINERY ENGINEERING BLDG., Christian St., SARNIA, ONT. Imperial Oil Ltd., 56 Church St., Toronto, Ont. John B. Parkin Assocs., 717 Church St., Toronto, Ont., archts. R. W. Dunlop, 445 S. Christian St., Sarnia, Ont., engr. Awarded Nov. 26. CD 11/9.
▲ **Marshall Development Co.**, 185 Bloor St. E., Toronto, Ont., CA, $2,454,000, 216-suite APARTMENT, Dale and McKenzie aves., TORONTO, ONT. Kensington Industries, Inc., 1224 St. Catherine St. W., Montreal, Que. Bids Nov. 17, awarded Nov. 29. CD 11/17.
▲ **Theroux Constr. Ltd.**, 9 Blvd. Strathmore, Dorval, Que., CA, $1,300,000, HOUSING DEVELOPMENT, Forest Gardens on Sherbrooke St. west of St. Charles

(Continued on page 68)

WHATEVER YOUR ROLLER BEARING APPLICATION

specify BOWER!



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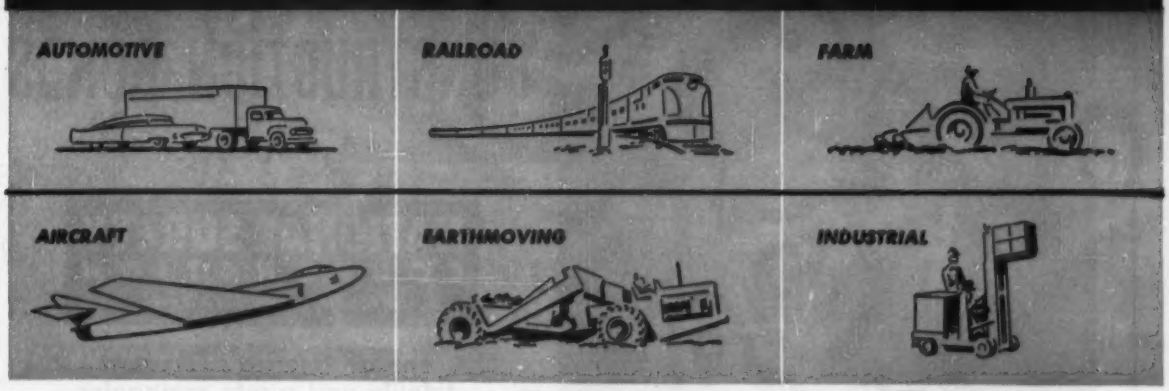


BOWER
ROLLER BEARINGS
SPHER-O-HONED

(Continued from page 66)

Rd., BEACONSFIELD, QUE. Anchor Enterprises Ltd., 137 Cartier Ave., Pointe Claire, Que.

▲ **G. A. Gauthier**, 4253 deLaroche St., Montreal, Que., Owner Builds, $5,000,000, 100 six-suite each, APARTMENTS, Sherbrooke St. and Cadillac St., MONTREAL, QUE.

Colonial Housing Ltd., 6901 Sherbrooke St. E., Montreal, Que., Owner Builds, $690,000, 42 more HOUSING UNITS, Radleach St. between Sherbrooke St. E. and Davis St., MONTREAL, QUE.

▲ **Harvey Realties Ltd.**, 400 Oak Ave., St. Lambert, Que., Owner Builds, $2,000,000, 200 HOUSES, ST. BRUNO, QUE. E. Bujold, 6904 Molson St., Montreal, Que., archt.

▲ **Columbia Constr., Inc.**, Dominion Square Bldg., Montreal, Que., Owner Builds, $3,000,000, CHURCH, SCHOOL, SHOPPING CENTER, 135 BUNGALOWS, opposite Ile Bigras, ST. GENEVIEVE DE PIERRE, QUE. D. K. Linden, Dominion Sq. Bldg., Montreal, Que., archt.

LATIN AMERICA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Sideico, Ltd.**, Pasto, Colombia, CA $644,000, grain storage terminal at Pasto;

Rojas & Borrero, Ltd., Bogota, Colombia, CA $575,960, grain storage terminal at Elbanco, COLOMBIA. Corporacion de Defensa de Productors Agricolas, Bogota, Colombia. Drying Plant Engineers, Inc., 1001 Connecticut Ave. N.W., Wash., D. C., U. S. A., engr. CD 4/28.

Proposed Projects

WATER SUPPLY

▲ **Tex., Wylie**—North Texas Municipal Water Dist., c/o Jim Cantrell, Princeton, water filtration plant for the district to service 9 to 10 towns. $1,500,000.

SEWERS, WASTE DISPOSAL

▲ **Ind., New Albany**—City, City Hall, plans by Hawkins & Walker, 218 Elsby Bldg., sewage disposal plant and sanitary sewers, sludge beds, digestion tanks, sanitary sewers. $1,000,000. CD 7/31/46. Ralph L. Woolpert, 360 W. 1 St., Dayton, O., consult. engr.

▲ **Minn., Mankato**—City, C. F. Tringle, mgr., constr. remaining section of interceptor sewer, $300,000-$400,000; sewage treatment plant, $800,000, Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, consult. engrs. CD 3/10/49.

▲ **O., Akron**—City, Leo G. Walter, Serv. Dir., Municipal Bldg., secondary sewage treatment plant at nearby Botzum, to handle 50 m.g.d. instead of 37 m.g.d. $5,000,000. Beiswenger & Hoch, 661 W. Market St., Akron, consult. engrs. CD 5/5.

BRIDGES

▲ **Tex., Galveston**—Galveston Co., c/o Comrs. Court, Court House, toll bridge over San Luis Pass, linking Galveston and Brazoria Counties. $1,500,000. Howard-Needles-Tammen & Bergendoff, 921 Walnut St., Kansas City, Mo., consult. engrs. CD 8/20/53.

STREETS AND ROADS

▲ **Okla., Tulsa**—City, City Hall, voted bonds Nov. 16, expressway and right of way. $1,450,000. W. R. Wooten, city engr. CD 3/5/52.

▲ **Tex., Liberty**—Liberty Co., c/o Comrs. Court, Liberty, constr. Hy. 90 thru the county, $1,250,000; road work in Precinct 2, $350,000; road work in Precinct 3, $400,000.

▲ **Ont., Toronto**—Municipality of Metropolitan Toronto, City Hall, council approved early start of fourth section of Lakeshore Expressway from Dowling Ave. east to Spadina Ave. $18,000,000. A. D. Margison & Assocs., 30 Eglinton Ave., Toronto, and DeLeuw, Cather & Co., 150 N. Wacker Dr., Chicago 6, Ill., U. S. A., consult. engrs. CD 7/13/53.

AIRPORTS

▲ **Okla., Tulsa**—AIRPORT—City, City Hall, voted bonds Nov. 16, secondary airport in West Tulsa, $350,000; airport expansion $2,150,000. W. R. Wooten, city engr. CD 1/12/45.

▲ **Ont., Toronto**—AIRPORT—Dpt. Transport, Hunter Bldg., Ottawa, enlarging Toronto-Malton Airport, runways and terminal, $22,000,000. R. A. Bradley, 260 Richmond St. W., distr. airway engr. CD 7/24/53.

LATIN AMERICA

▲ **Netherlands West Indies, Curacao**—CRACKING UNIT Royal Dutch Shell Group, Cardon, Venezuela, plans fluid catalytic cracking unit. $28,000,000. N. V. DeBataafsche Petroleum Mij, A Dutch-Shell Operating Co., c/o The Hague, Holland, consult. engr.

▲ **Venezuela, Cardon**—CRACKING UNIT—Royal Dutch Shell Group, Cardon, plans fluid catalytic cracking unit, $25,000,000. N. V. DeBataafsche Petroleum Mij, A Dutch-Shell Operating Co., c/o The Hague, Holland, consult. engr.

PUBLIC BUILDINGS

▲ **Calif., Lodi**—SCHOOL—Lodi Union High School District, Lodi, plans by Falk & Booth, 9 Main St., San Francisco, high school, Sargent Rd. $2,038,000. CD 5/25.

▲† **Calif., Los Angeles**—DIAGNOSTIC WING—Veterans Admin., Munitions Bldg., Wash. 25, D. C. plans by Pereira & Luckman, 9220 Sunset Blvd., rein.-con. diagnostic unit, $3,000,000.

▲ **Calif., Modesto**—SCHOOLS—Modesto School District, Modesto, voted bonds, $1,620,000 for high school district; $1,850,000 for elementary school district; $1,500,000 for junior college district for new schools.

▲ **Colo., Denver**—STATE OFFICE—State of Colorado, State Office Bldg., plans by G. Meredith Musick, archt.-engr., 1000 Patterson Bldg., 6 story, concrete, steel state office bldg. $3,400,000.

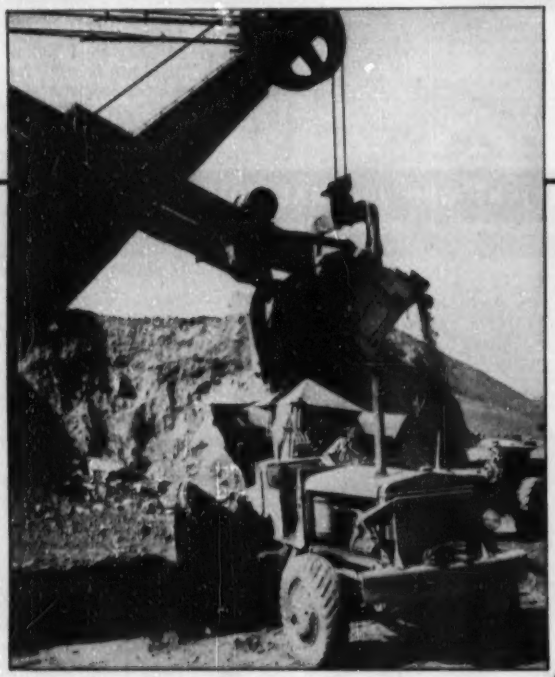
▲ **Mich., Detroit**—GARAGES—City, Municipal Parking Auth., 1214 Griswold St., roof parking garage and parking lot on site of convention hall and exhibits bldg., West Jefferson, Shelby and Detroit River, $4,485,000; auditorium parking garage, Henry and Edsel Ford, $1,575,000; plans by H. K. Ferguson Eng. Co., 600 Woodward St., Detroit, underground garage facility, Grand Circus Park, $4,100,000, Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York 6, N. Y., consult. engrs. for all projects, M. F. Wagnitz, city engr. CD 5/7/54.

▲ **Mich., Detroit**—GARAGE—City, Municipal Parking Auth., 1214 Griswold St., 5 story, concrete, steel parking garage, Randolph, Congress, Brush and Larned Sts. $1,517,000, Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York 6, N. Y., consult. engrs. M. F. Wagnitz, city engr. CD 1/27/53.

▲ **Mich., Flint**—CULTURAL CENTER—City, Harry K. Cull, clk., Flint Cultural Center, incl. auditorium, outdoor theater, Little Theater, 2 museums, planetarium, art center, etc. $7,000,000, Clarke & Rapuano, 145 E. 32 St., New York, N. Y., consult. engrs.

▲ **Minn., St. Paul**—SCHOOL—Bd. Educ., F. E. Conner, supt., J. Voigt, School Bd. archt., 615 City Hall and Court House, plans by Hammel & Green, 186 Fairview Ave. N., Highland Park Junior High School, Montreal and Snelling Aves. $1,500,000. CD 11/9/53.

▲ **N. Y., Brentwood**—HOSPITAL MODERNIZATION—Dpt. P. Wks., The Governor Alfred E. Smith State



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▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-165, P. S. 89. $2,000,000. CD 9/8/48.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-140, P. S. 37. $1,750,000. CD 9/8/48.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-188, P. S. 34. $1,660,000. CD 9/8/48.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-145, P. S. 31. $1,675,000. CD 9/8/48.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-96, P. S. 19 addn. $1,800,000. CD 9/8/48.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., Bureau Constr. 42-15 Crescent St., Long Island City, Zone 1, Proj. E-205, P. S. 87. $1,665,000. CD 9/8/48.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-177, P. S. 83 addn. $1,500,000. CD 9/8/48.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-192, P. S. 76. $1,900,000. CD 9/8/48.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-201, P. S. 68. $1,850,000. CD 9/8/48.

▲ **N. Y., Central Islip**—HOSPITAL—Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany, 480-bed medical-surgical unit and alterations to existing facilities at Central Islip State Hospital, $4,852,000. CD 7/9/53.

▲ **N. Y., Kings Park**—HOSPITAL BLDGS.—Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany, 550-bed disturbed patients bldg., $5,000,000; 430-bed surgical bldg., $3,255,000; modernization of 10 bldgs., $3,495,000; 550-bed disturbed patients bldg. $5,000,000, at Kings Park State Hospital. CD 7/9/53.

▲ **N. Y., Lake Success**—SCHOOLS—Great Neck School Dist., 345 Lakeville Rd., Great Neck, referendum to be held Dec. 8, 1,400-pupil Junior High School and 1,200-pupil Senior High School, 95-acre tract off Lakeville Rd. $7,900,000. CD 5/19.

▲ **N. Y., New York**—HIGH SCHOOL—Bd. Educ., Bureau Constr., 45-12 Crescent St., Long Island City, Zone 1, 1, plans by William Gehron, 101 Park Ave., Zone 17, Proj. E-893, Junior High School 44, vicinity 75th St. and Amsterdam Ave., Manhattan Boro. $4,950,000.

▲ **N. Y., New York**—HIGH SCHOOL—Bd. Educ., Bureau Constr., 45-12 Crescent St., Long Island City, Zone 1, Proj. E-61, Bronx Vocational High School addn. $3,000,000. CD 2/4/43.

▲ **N. Y., New York**—SCHOOL—Bd. Educ., Bureau Constr., 45-12 Crescent St., Long Island City, Zone 1, Proj. E-100, P. S. 9, vicinity 138 St. and Brook Ave. $2,000,000. CD 1/21/44.

▲ **O., Maumee**—BUILDINGS, etc.—Comrs. Lucas Co., Court House, Toledo, plans by Hahn & Hayes, 723 Adams St., Toledo, new buildings and remodel Lucas County Children's Home. $1,700,000. CD 11/9.

▲ **Pa., Johnstown**—VOCATIONAL REHABILITATION CENTER—General State Auth., 18 and Herr St., Harrisburg, constr. State Vocational Rehabilitation Center. $1,600,000. H. F. Lenz Co., Johnstown, Pa., and Buchart Eng. Corp. York, consult, engrs. A. F. Jones, c/o owner, ch. engr.

▲ **Pa., Sharon Hill**—RESIDENCES—Owner, Sponsored by Delaware County Redevelopment Auth., Media, plans by Henry S. Churchill, 204 W. Rittenhouse Square, Phila., residential development, Darby Twp. at Hook and Scott Rds. $1,800,000.

▲ **Tex., Dallas**—SCHOOL—Dallas Independent School Dist., 3700 Ross St., bond election Dec. 11, remodeling, refurbishing existing school group. $3,000,000. CD 4/30.

▲ **Wash., Seattle**—TEACHING HOSPITAL, etc.—University of Washington, Seattle, Zone 5, completion of teaching hospital, $8,525,000; pharmacy addn. to Health Science Bldg., $2,000,000; dental bldg., $1,100,000. CD 10/29/51.

▲ **Wyo., Cheyenne**—SCHOOLS—School District No. 1, Laramie Co., 2118 E. Central Ave., 4 elementary schools, completion of Eastridge and Johnson Junior High Schools and addns. to Rossman and Chaplin Schools. $2,500,000. Sam C. Hutchings, Jr., 1902 Thomas Ave., Cheyenne, Wyo., consult. engr. part of work only. CD 2/10/53.

▲ **Ont., Toronto**—CITY HALL—City, City Hall, plans by Marani & Morris, 1250 Bay St., Mathers & Haldenby, 15 St. Mary St., and Shore & Moffat, 79 Queen St., new city hall, bounded by Bay, Queen, Chestnut and Hagerman Sts., $10,000,000. CD 11/16.

COMMERCIAL BUILDINGS

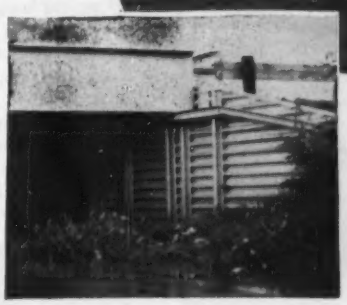
▲ **Calif., Garden Grove**—DWELLINGS—Beverly Gardens, 144 S. La Brea Ave., Los Angeles, plans by Wm. G. Chandler, 7411 Beverly Blvd., Los Angeles, 226 frame, stucco dwellings, $2,000,000.

▲ **Calif., San Jose**—DEPARTMENT STORE—Sears, Roebuck & Co., 2650 E. Olympic Blvd., Los Angeles, department store, Race and San Carlos Sts. $2,500,000.

▲ **Conn., Hartford**—OFFICE—Owner, c/o Les Cutler, 190 Trumbull St., plans by Julius Berenson & Clifton C. West, 48 Forest St., 6 story, T-shaped, 120,000

(Continued on page 71)

Versatile Structural-Plate
BRIDGE FLOORING . . .



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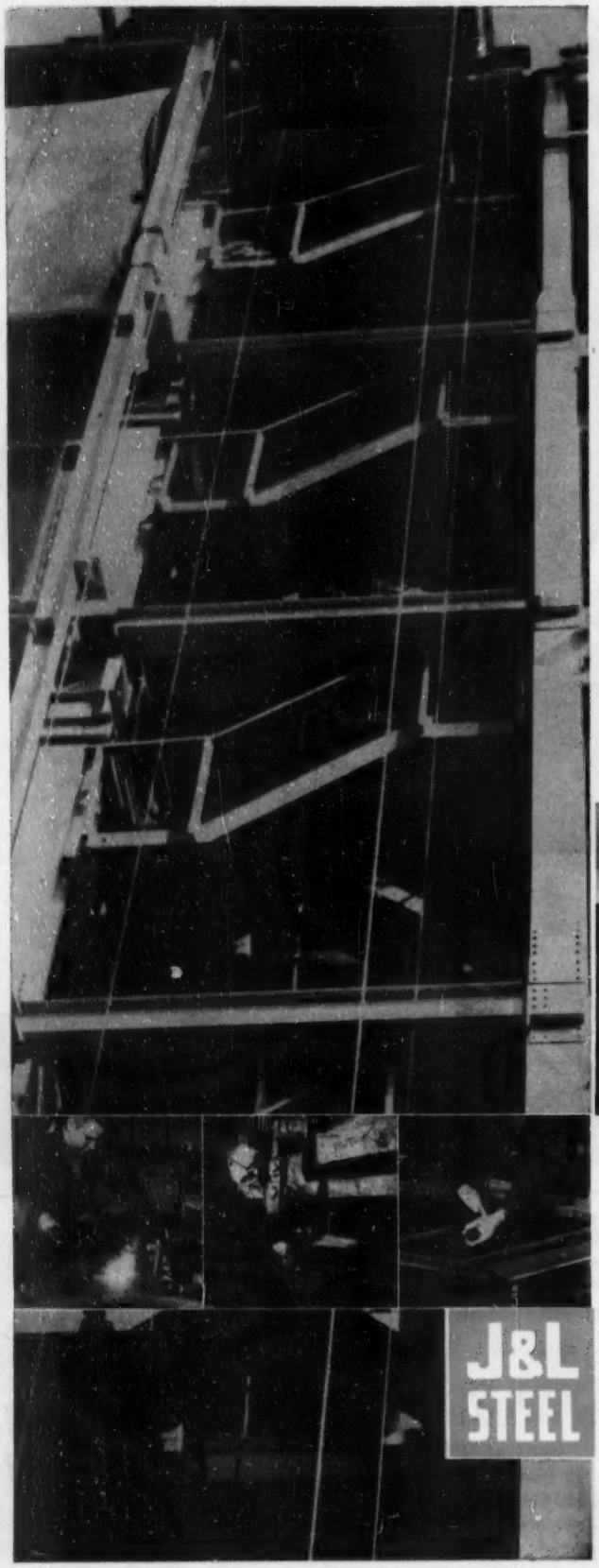

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(Continued from page 69)

sq. ft., office, paved parking area, 385 Farmington Ave. to span Park River, $2,000,000.

▲ **Ill., Hillside**—SHOPPING CENTER—Hubert E. Howard, 6 N. Michigan Ave., Chicago, Zone 2, plans by Bruce Gordon, 1 N. La Salle St., Chicago, Zone 2, and Welton Becket, 5657 Wilshire Blvd., Los Angeles, Calif., shopping Center, $10,000,000. CD 12/10/52.

▲ **La., New Orleans**—HOMES—Pontchartrain Park Homes, Inc., Edgar B. Stern, pres., 1523 Canal St., 1,000 home negro development in Gentilly Lake front section, $15,000,000.

▲ **Mich., East Detroit**—SHOPPING CENTER—Schostak Brothers & Co., 3415 Cadillac Tower, Detroit, shopping center incl. 40 stores, Gratiot and Eight Mile Rd., $5,000,000.

▲ **Mo., Pagedale (St. Louis 21 P. O.)**—HOSPITAL—St. Vincent's Hospital, Daughters of Charity of St. Vincent de Paul, 7301 St. Charles Rock Rd., Zone 21, 4 story, brick, concrete, steel St. Catherine Laboure Clinic addn., and modernization, reconditioning present bldg. $2,200,000. CD 12/8/53, under Mo., Normandy.

▲ **O., Dayton**—APARTMENT—Affiliated Builders, Inc., c/o Philip Bimrbaum, archt., 12 E. 48 St., New York, N. Y. 7 story, 124-unit steel, concrete, brick facing apartment Grafton and Riverview Aves. $1,700,000.

▲ **O., Dayton**—HOUSING—Grant-Holladay Constr. Co., Callahan Bldg., 500 homes, 131-acre tract, east of here on south side of Indian Riffle Rd., east of Woodman Dr. to be known as "Newcom South". $5,750,000.

▲ **O., Toledo**—HOMES—Talmadge Gardens Assoc., c/o Henry Bruning, Mayfair Lumber & Supply Co., 5240 Lewis Ave., 223 homes on ten new streets west of Talmadge Rd., south of Sylvania Ave. $6,000,000.

▲ **Pa., Conway**—SHOPPING CENTER—Northern Light Shopping Center, Inc., 383 S. 3 St., Columbus, O., plans by C. Melvin Frank, 185 E. State St., Columbus, O., 1 and 2 story, brick, tile, steel shopping center, near here. $10,000,000.

▲ **Pa., Phila.**—APARTMENT—E. J. Frankel, 2201 Benjamin Franklin Parkway, apartment, 19 and Locust Sts. $3,000,000.

▲ **Pa., Pittsburgh**—APARTMENT—401 Shady Ave. Corp., Investment Bldg., 8 story bsmnt., brick, block, steel frame, 234-unit apartment. $3,500,000.

▲ **Tex., Fort Worth**—OFFICE, etc.—Ernest Allen, 5th and Commerce St., 9 story 75x100 ft., 360,000 sq. ft. office and parking garage. $3,000,000.

▲ **Ont., Georgetown**—SATELLITE TOWN—Rex Heslop Homes Ltd., 2000 Kipling Ave. N., Toronto, new satellite town, incl. residences on 450-acre site, industrial bldgs. on 350-acres, early start on 185 homes, 36 mi. northwest of Toronto on 800-acre site, $22,000,000. Dr. E. G. Faludi, 614 Church St., Toronto, consult. engr.

▲ **Ont., Ottawa**—HOUSES—Louis Gendron Ltd., Montreal Rd., 1,600 houses in Gloucester Twp., known as Edgewater Heights and Blair Gardens, east of here, $20,000,000.

INDUSTRIAL BUILDINGS

▲ **Calif., Fullerton**—FACTORY—Kimberly-Clark Corp., 128 N. Commercial St., Neenah, Wis., 500,000 sq. ft. paper factory. $2,000,000.

▲ **Colo., Denver**—STEAM POWER PLANT, etc.—Public Service Co., 15 and Champa Sts., steam power plant to be known as Cherokee Station, $19,000,000; 4th generating unit at Arapahoe Station, $7,000,000.

▲ **Missouri**—PLANTS—Kansas City Power & Light Co., Harry B. Munsell, pres., 1330 Baltimore St., Kansas City, Mo., 1st phase, 170,000 kw generator plant, 3,500 ft. earth-fill dam on Deepwater Creek for 1,800 acre lake of 500 m.g., 2 transmission lines of 160,000 volt to Kansas City 70 mi. on steel towers, 4 generators. $32,500,000; 2nd phase, 3rd phase, 4th phase, three 170,000 kw generator plants, 3 addnl. transmission lines, two to Kansas City and one to Paola, Kan., $92,500,000, 9 mi. southwest Clinton.

▲ **N. Y., Corona**—SWITCHING BLDG., etc.—Consolidated Edison Co., 4 Irving Pl., New York, Zone 3, switching bldg. and transformer equipment sub-station on tract bounded by 53 Ave., 55 Ave., 98 St. and 99 St. $8,000,000.

▲ **O., Campbell**—REVAMP and MODERNIZE BLDG.—Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown, revamp and modernize Campbell Works cold strip department. $5,000,000.

▲ **O., Cleveland**—LABORATORY—Union Carbide & Carbon Corp., Box 6087, plans by Skidmore, Owings & Merrill, 575 Madison Ave., New York, N. Y., research and administrative center in 66-acre site, near Snow Rd. and W. 130 St. in Parma. $4,000,000. The Austin Co., 16112 Euclid Ave., East Cleveland, Zone 12, engr. H. R. Holman, c/o owner, engr. CD 8/2.

▲ **Alaska, Anchorage**—STEAM PLANT—Chugach Electric Assn., Anchorage, 500,000-kw addn. to Knik Arm Steam Plant, $2,800,000. CD 3/16/50, under Unclassified, Alaska.

UNCLASSIFIED

▲ **Wash., Seattle**—BARGE NAVIGATION, etc.—Port of Seattle, Bell St. Terminal, Zone 1, development of Duwamish and Lower Green River for barge navigation and industrial development, incl. dredging, filling, etc. $8,700,000. G. T. Treadwell, ch. engr. CD 3/31/47.

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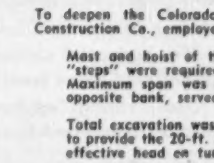

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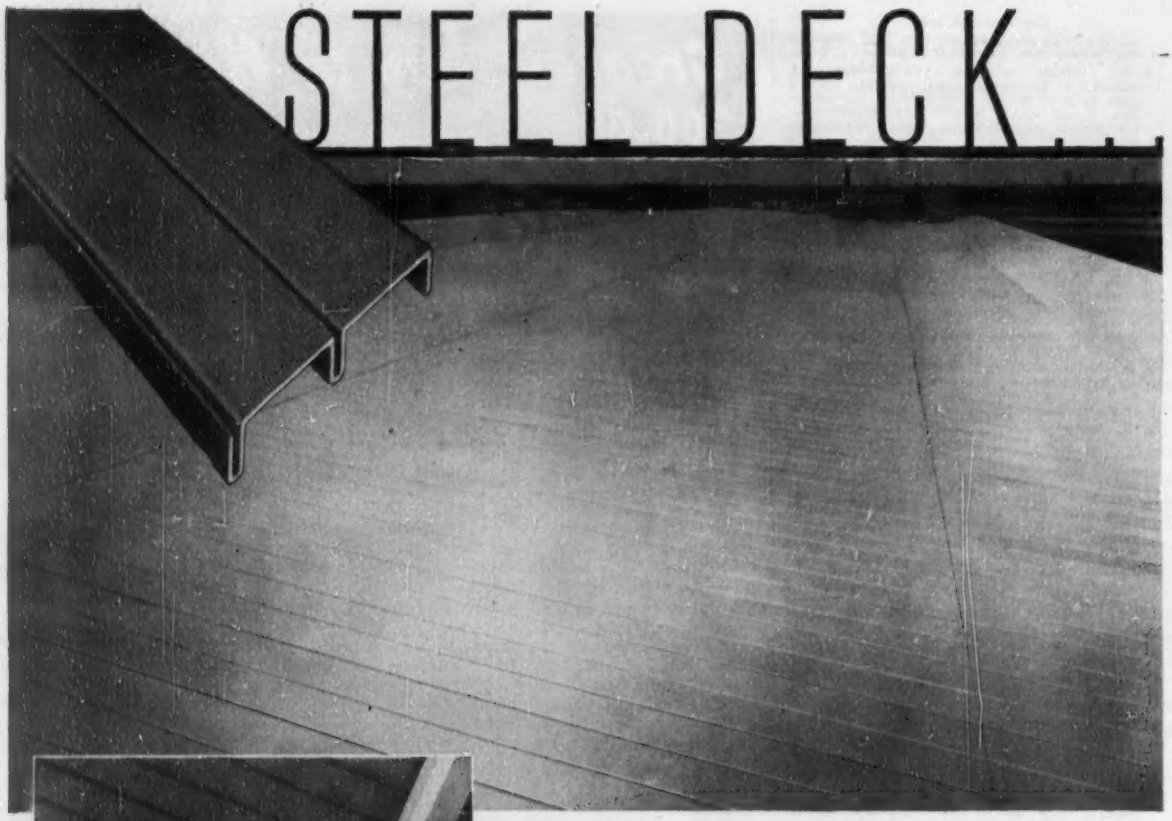

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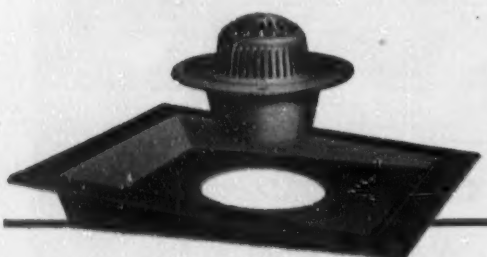

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NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 21 Massachusetts

BIDS ASKED—BUILDINGS

Mass., Waltham—SCHOOL—BA 12/23—City, J. W. McSevitt, supt. Schools, 55 School St., North West Elementary School, Casey Property. $500,000. Plans deposit $50. Chester F. Wright, 68 Main St., archt. CD 11/5/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Theodore Loranger & Sons, 404 Nash Rd., New Bedford, Mass., LB, $1,724,811. aircraft aprons, warmup pad and aircraft refueling facilities, Otis Air Force Base, ENG-19-016-55-48, FALMOUTH, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Dec. 7. CD 11/15.

BUILDINGS

LOW BIDS AND CONTRACTS

Grande & Son, Inc., 425 A Broadway, Everett, Mass. CA $643,500. SENIOR HIGH SCHOOL, BEDFORD, MASS. Town, School Bldg. Comn., Junior High School Bldg., School Ave., Bedford, Mass. Bids Dec. 2, awarded Jan. 2. CD 11/8.

Lilly Constr. Co., 122 Hampshire St., Cambridge, Mass. CA Approx. $550,000. perishable goods WAREHOUSE, 420 D St., SOUTH BOSTON, MASS. Stop & Shop, Inc., 393 D St., South Boston, Mass. Bids Nov. 19. CD 11/12.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
December 21 Maryland, Pennsylvania
STREETS AND ROADS
December 21 Maryland

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Great Lakes Dredge & Dock Co., 17 Battery Pl., New York 4, N. Y., CA $848,673, dredging in New York and New Jersey Channels, Sect. 4, Rock Area 5, Serial No. CIVENG-30-075-55-21, NEW YORK AND NEW JERSEY. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Nov. 10. CD 10/25.

▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Fehlhaber Corp., 217 E. 49 St., New York 17, N. Y. CA $2,263,277, est. $2,273,000. 0.17 mi. New York State Thruway-New England Sect. Contr. 5B (Eastchester Creek Bridge superstructure), FANETC. 54-3, Bronx Co. Bids Oct. 28, awarded Nov. 29. CD 11/3, under LB.

▲ Mount Vernon Bridge Co., Sugar and Adams Sts., Mt. Vernon, O., LB $3,176,577, fabrication and erection superstructure for Barnhart Island Bridge over St. Lawrence River, near Massena, St. Lawrence Co., Spec. 5422-C, St. Lawrence Contr. No. 6, NEW YORK. The Power Authority of the State of New York, 270 Broadway, New York 7, N. Y. Bids Dec. 7. CD 11/12.

† Nager Electric Co., Inc., 426 Broadway, New York, N. Y. CA $898,000, modernization electrical distr. sys., Brooklyn Army Base, Terminal New York, Port of Embarkation, Serial No. ENG-30-075-55-16, BROOKLYN, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Nov. 18. CD 11/24, under LB.

L. I. Waldman & Co., Inc., 30-06 28th St., Long Island City, N. Y. and Peerless Constr. Co., Inc., 330 W. 42 St., New York, N. Y., LB $713,950, reconstr. 42nd Street Shuttle structure to accommodate passenger conveyor connecting Grand Central and Times Square Stations, Manhattan Boro, Contr. No. C-104, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Dec. 17. CD 11/18.

BUILDINGS

LOW BIDS AND CONTRACTS

E. W. Howell Co., 101 Park Ave., New York 17, N. Y. CA $600,000. 1 and 2 story PREP SCHOOL for Girls, DOBBS FERRY, N. Y. Masters School, Clinton Ave., Dobbs Ferry, N. Y. Gugler, Kimball & Husted, 101 Park Ave., New York 17, N. Y., archts.

Just Constr. Co., c/o John Burton, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds. $553,500, 41 HOUSES in area bounded by 58 Ave., 260 St., 60 Ave. and 263 St., DOUGLASTON, N. Y.

▲ The Winston, Inc., c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn, N. Y. Owner Builds. $1,960,000, 6 story APARTMENT, Wexford Terrace, Edgerton Blvd., JAMAICA, N. Y. CD 6/30.

▲ Caristo Constr. Co., 26 Court St., Brooklyn 2, N. Y. LB $1,255,000, general constr. PUBLIC SCHOOL 197, west side, 5 Ave. between W. 135 and W. 136 Sts., Manhattan Boro, NEW YORK, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Dec. 6. CD 11/11.

▲ Caristo Constr. Co., 26 Court St., Brooklyn 2, N. Y. LB $1,266,000, constr. PUBLIC SCHOOL 19, 1st Ave., E. 11 and 12 Sts., Manhattan Boro, NEW YORK, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Dec. 2. CD 11/9.

▲ Frank E. Freeman, Inc., & Mandel Bros. Contr. Corp., 188 Montague St., Brooklyn 2, N. Y., CA $1,916,730. Contr. 2881-A, general constr. for alterations in connection with rehabilitation of Whitehall-South Street, FERRY TERMINAL BLDG., Manhattan Boro, NEW YORK, N. Y. Comr. Marine & Aviation, Pier 1, North River, New York 4, N. Y. Bids Sept. 20. CD 10/29, under LB.

Henry Goelet, c/o Charles N. & Selig Whinston, archts., Grand Central Terminal Bldg., New York 17, N. Y. Separate Contracts. $750,000. 5 story roof and cellar PARKING GARAGE, 6 Ave. and 45 St., NEW YORK, N. Y. CD 1/10/52.

▲ Simon Bros., 292 Madison Ave., New York 17, N. Y. Owner Builds. $1,500,000. 16 story APARTMENT, Second Ave. from 66 to 67 Sts., to be called 301 E. 66 St., NEW YORK, N. Y. George G. Miller, 125 W. 45 St., New York 19, N. Y., archt.

▲ General Electrical Co., River Rd., Schenectady, N. Y. CA, turbo generator;
Combustion Engr., Inc., 200 Madison Ave., New York, N. Y., CA, boiler for 83,500 kw. steam GENERATING UNIT, ROCHESTER, N. Y. Total est. $13,000,000. Rochester Gas & Electric Co., 89 East Ave., Rochester 4, N. Y. CD 4/13/48.

▲ Raleigh Terrace Homes, c/o Henry A. Klar Realty Co., 220-02 Horace Harding Blvd., Bayside Hills, N. Y. Owner Builds. $1,500,000. 122 HOUSES, Higbie Lane, south of Sunrise Hy., WEST ISLIP, N. Y.

▲ William F. Sutter, Schley St., Nescopeck, Pa., CA $1,344,220, constr. Senior HIGH SCHOOL for Connellsville Joint School Bd., CONNELLSVILLE, PA. State Public School Building Auth., 101 S. 25 St., Harrisburg, Pa. Bids Nov. 9. CD 11/12, under LB.

Moyer Bros., 2605 Beale Ave., Altoona, Pa., CA $793,000. brick, tile, steel Eisenhower HIGH SCHOOL, LANDER, PA. Northern Area Joint School Auth., Sugar Grove, Pa. and State Public School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. CD 12/3, under LB.

▲ Key Constr. Co., 355 W. State St., Media, Pa., Separate Contracts. $2,500,000. RESIDENTIAL DEVELOPMENT, Lenni Rd., LIMA, PA. Jack Swerman, 405 Market St., Chester, Pa., archt.

▲ Wark & Co., 1920 Sansom St., Phila., Pa. LB $1,154,000 general contract for replacement of BUILDING No. 11, Norristown State Hospital, NORRISTOWN, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Dec. 8. CD 11/4.

▲ McCloskey & Co., 1620 W. Thompson St., Phila., Pa. LB $3,287,000. Senior HIGH SCHOOL, Cottman St., etc., PHILA., PA. Bd. Educ., 21st and Winter Sts., Phila., Pa. Bids Dec. 2. CD 11/23.

▲ S. H. Evert Co., Inc., Danville Rd., Bloomsburg, Pa. CA $4,563,500, general constr.;
Herre Bros., 6th and Montrose Sts., Harrisburg, Pa., CA $733,100, heating constr., central group;
Keystone Eng. Co., 135 N. 5th St., Reading, Pa., CA $649,050, electrical constr., central group, of Selinsgrove STATE SCHOOL expansion, SELINSGROVE, PA. Grand total $5,945,650. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Nov. 17. CD 11/22, under LB.

Moyer Bros., 2605 Beale Ave., Altoona, Pa., CA $793,000, general constr. Secondary SCHOOL for Northern Area Joint School Bd., SUGAR GROVE, PA. State Public School Building Auth., 101 S. 25 St., Harrisburg, Pa. Bids Nov. 18. CD 11/23, under LB.

▲ A. Lloyd Goode Contg. Co., 2001 38th St. S. E., Wash., D. C., Owner Builds. $2,000,000. SHOPPING CENTER, EASTOVER, MD. (D.C.P.O.). CD 9/10.
Roland Duke, Leonardtown, Md. LB $549,840. HOSPITAL addn., alterations, LEONARDTOWN, MD. St. Mary's Hospital, Leonardtown, Md. Bids Nov. 30. CD 3/16, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
December 21 South Carolina
STREETS AND ROADS
December 21 North Carolina

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ FLORIDA—State Road Dpt., Tallahassee,
White Constr. Co., Inc., Bronson, Fla., LB, $267,413, rock base with Type 1-a surf., b. conc. surf. course 8.336 mi. State Rd. 55, F-016-2 (7), Dixie Co.;
Marion Constr. Co., Ocala, Fla., LB, $225,929, maint. traffic, rock base with b. conc., storm sewers, curb, gutter, sidewalk, etc. 0.807 mi. State Road 55, F-016-2 (10), Job 3001-028 and F-016-1 (5) Job 3001-209, Dixie Co.;
Duval Eng. & Constr. Co., Box 1388, Jacksonville, Fla., LB $418,225, rock base with b. conc.; storm sewers, curb, gutter, maint. traffic 1.162 mi. State Road 115, U-506 (1), Job 7209-275, Duval Co.;
Burton Walker Constr. Co., Plant City, Fla., LB, $122,080 rock base, reworking existing base, surf., storm sewers, curb, gutter, etc. 45,133 sq. yd. University of Florida in Gainesville, Job 2618-118, Alachua Co.;
S. M. Wall Constr. Co., 1650 N. E. 23 St., Gainesville, Fla., LB $122,080, limerock base, surf. tr. 7.461 mi. State Road S-214, Job 2662-150, Alachua Co.;
Doyle Pope, Quincy, Fla., LB, $69,162 removal existing pavement, grading roadway, asph. hot mix pavement, b. conc. storm sewer, curb, gutter, maint. traffic 1.675 mi. Cherry St. and Cove Blvd., Panama City, Job 4600-104, Bay Co.;
Smith Eng. & Constr. Co., Drawer 1831, Pensacola, Fla., $474,017, sand clay base, surf. tr. 16 mi. State Road 267, Jobs 5530-102 and 5530-101 and 5910-102, Leon and Wakulla Counties;
A. F. Rich Constr. Co., Monroe and Pershing Sts., Tallahassee, Fla., LB, $141,431 heavy excav., drainage structures 11.54 mi. State Road 30, Job 5911-110, Wakulla Co.;
Brinson Constr Co., Box 2209, Tampa, Fla., LB, $684,407 rock base, b. conc. storm sewers, curb, gutter 2.562 mi. State Roads 15 and 600, Job 7715-101, Seminole Co. Bids Dec. 7.

▲† Paul Smith Constr. Co., 431 E. Central Ave., Orlando, Fla., CA, $1,019,636, Missile Shop "J" and electrical power addn., AFMTC, Patrick Air Force Base, ENG-08-123-55-23, COCOA, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Nov. 5. CD 9/29.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Larrymore Lawns, c/o Herman A. York, archt., 90-04 161 St., Jamaica, N. Y. Owner Builds. $5,600,000. 400 HOUSES on tract on Little Creek Rd., east of Military Hy., Norfolk, NORFOLK, VA.

George J. Glover Co., 1430 Whitney Bldg., New Orleans, La. LB $554,702. brick, steel frame CHURCH, WESTWEGO, LA. Our Lady of Prompt Succor Church, Ave. A and Fourth St., Westwego, La. Diboll-Kessels & Assoc., 637 Pere Antoine Alley, New Orleans, La., archts. CD 7/31/46.

MIDDLE WEST

BIDS ASKED—BUILDINGS

▲ Ind., Hammond—SCHOOL—BA 1/6—School, City of Hammond, 5935 Hohman Ave., Lafayette Elementary School and Public Library, Maywood and Sibley Sts. $1,000,000. Warren S. Holmes, Olds Tower, Lansing, Mich., archt. CD 12/21/53.

▲ Ind., Hammond—PLANT—BA 1/19—Standard Oil Co. of Indiana, and Sinclair Refining Co., 910 S. Michigan Ave., Chicago 5, Ill., nitrogen fixation unit at ammonia plant. Total est. $10,000,000. CD 10/11.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

George Sheaf & Co., 449 Neilston St., Columbus, O. CA $640,494, dam in Hueston Woods State Park, Butler Co., OHIO. State Dpt. Natural Resources, State Office Bldg., Columbus, O. Bids Nov. 26. CD 12/2, under LB.

T. & M. Constr. Co., Ledi, O., CA Approx. $85,000, 3¾ mi., 10¾ in. pipe line to increase supplies to Ashland, Ashland Co.;
The Ohio Fuel Pipeline Constr. Co., Newark, O., CA Approx. $600,000, 10½ mi. 20 in. pipe line in Hocking and Fairfield Counties to bring natural gas from underground storage to Crawford Compressor Station, supplying Columbus and Central Ohio, OHIO. Ohio Fuel Gas Co., 99 N. Front St., Columbus, O. CD 8/21/53.

INDIANA—State Road Comn., Indianapolis,
rejected bids May 18, 2.17 mi. State Road 136 Speedway City, Marion Co., LB $588,722. CD 5/25, under LB.

▲ Marsch Constr. Co., 1307 W. Wrightwood St., Chicago, Ill., LB, $1,716,925, Rhode Island Ave. intercepting and sanitary sewer, GARY, IND. Sanitary Dist. of Gary, City Hall, 4 and Broadway, Gary, Ind. Bids Nov. 22. CD 10/27.

† C. R. Meyer & Sons, 50 State St., Oshkosh, Wis., LB, $788,695, floodwall reconstr. and repair Illinois Waterway, Beardstown, CIVENG-11-032-55-7, ILLINOIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Nov. 23. CD 11/5.

▲ James McHugh Constr. Co., 6449 S. South Park Ave., Chicago, Ill., CA, $1,372,224, sewage treatment plant, CHICAGO HEIGHTS, ILL. Sanitary District of Bloom Twp., 307 E. 14 St., Chicago Heights, Ill. Bids Oct. 22, awarded Nov. 29. CD 11/1, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Abco Constr. Corp., 44 S. Ludlow St., Dayton, O. CA Approx. $500,000. 3 story, 30,000 sq. ft. aluminum OFFICE bldg., with bsmt. GARAGE, 228-232 N. Wilkinson St., DAYTON, O. Arthur Beerman, c/o contractor.

▲ Clifford C. Loss, Inc., 5756 Acres St., Sylvania, O. Owner Builds. $1,500,000, 120 HOUSES in Washington Park, east of Trilby, north from Alexis Rd. to Michigan state line, TOLEDO, O.

Superior Constr. Co., 1900 E. 7 St., Gary, Ind. CA, $500,000, CHURCH, GARY, IND. St. Joseph's Catholic Church, 44 and Delaware Sts., Gary, Ind. R. S. Kastendiech, 673 Broadway, Gary, Ind., archt. Awarded Nov. 29.

▲ Brookside Park Homes, 8016 Pendleton Pike, Lawrence, Ind., Owner Builds, $1,250,000. 100 HOMES, Brookside Park, along 56 St., LAWRENCE, IND.

Dahl Stedman Co., 7 S. Dearborn St., Chicago 3, Ill., CA, $720,000. ARCHITECTURE and DESIGN SCHOOL, CHICAGO, ILL. Illinois Institute of Technology, 3301 S. Dearborn St., Chicago, Ill. Bids Nov. 16, awarded Nov. 23. CD 10/27.

▲ Christman Co., 408 Kalamazoo Bldg., Lansing, Mich., CA, $1,720,547, 30 APARTMENT BLDGS. for married students, Michigan State College, EAST LANSING,

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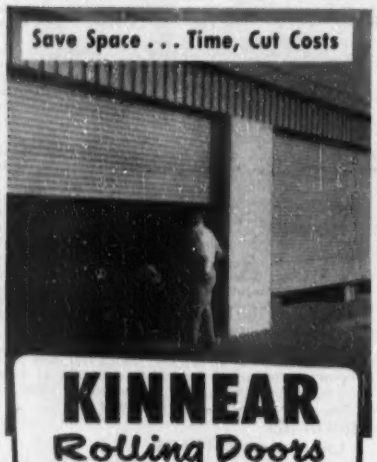

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MICH. State, A. N. Languis, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, Mich. Bids Nov. 19. CD 11/30, under LB.

▲ **John F. Uznis,** 8532 Steel St., Detroit 28, Mich. Owner Builds. $1,500,000. 140 brick ranch HOUSES, Hawthorne Heights, Rush, Burley and West Warren Sts., GARDEN CITY, MICH.

Lerner-Linden Constr. Co., 21701 Republic St., Oak Park, Mich., CA, $943,164, general contract ADMINISTRATION BLDG., 5 COTTAGES, Hawthorne Center, Children's Psychiatric Hospital, NORTHVILLE, MICH. State, Bldg. Dpt., Lewis Cass Bldg., Lansing, Mich. Bids Nov. 9. CD 11/16, under LB.

Krieghoff Co., 6661 French St., Detroit 13, Mich., CA, $500,000, WAREHOUSE, OFFICE and DISPLAY BLDG., 14-Mile Road and Coolidge St., ROYAL OAK, MICH. Morley Brothers, 5943 Second Blvd., Detroit 2, Mich. CD 11/9.

▲ **Merrill Threm Co.,** 20602 Harper St., Detroit 36, Mich., Owner Builds, $3,700,000, 300 HOMES, Cox Estates, Grant, Beste, Joan Ursuline Sts. off 12-Mile Road, ST. CLAIR SHORES, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

▲ **KANSAS**—BA 12/24—Kansas Turnpike Auth., c/o Gale Moss, chn., Annex Bldg., Topeka,
Douglass Co.—Kansas Turnpike: sub-structure and piers, 1,800 ft. bridge over Kaw River, Lawrence. $2,500,000. Howard, Needles, Tammen & Bergendoff, 1805 Grand Ave., Kansas City, Mo., engrs. CD 9/30, under Streets and Roads.

† **N. M., Clovis**—DORMITORIES—BA 12/29—U. S. Eng., Box 1538, Albuquerque, 2 story wood frame, 8,000 sq. ft. each dormitories, Clovis Air Force Base, Inv. No. ENG-29-005-55-50. $300,000-$650,000. CD 11/24.

BIDS ASKED—BUILDINGS

Colo., Wheatridge—CHAPEL, etc.—BA 12/21—Holy Cross Lutheran Church, 7901 W. 45 Ave., first unit, brick veneer chapel and Sunday School. $500,000. Orrie J. Holmen, 4380 Wadsworth Ave., engr. and archt. CD 8/23.

Tex., Houston—COMMERCIAL—BA 1/3—Southern States Insurance Co., 3402 Montrose St., approx. 3 to 4 story steel, brick commercial bldg. addns. $300,000-$750,000. Kuehne, Brooks & Barr, 203 Perry-Brooks Bldg., Austin, archts. W. Clark Craig, 3710 Gilbert St., and Jerald L. Davis, 9240 Kenilworth St., engrs. CD 11/18.

▲ **Minn., St. Louis Park**—SCHOOL—BA 1/26—Bd. Educ., H. R. Enestvedt, supt., 1 and 3 story V-shaped high school, incl. 3 gymnasiums, swimming pool, shop, laboratory facilities. $3,000,000. Bissell & Belair, 1111 Nicollet Ave., Minneapolis, archts. CD 10/27/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Wyoming Nebraska Pipe Line Co.,** Sidney, Neb., Owner Builds, $3,175,500, oil pipe line from near Cheyenne, Wyo. to North Plate, Neb., NEBRASKA and WYOMING. CD 8/24.

▲† **Robert E. McKee, General Contractor, Inc.,** Box 562, El Paso, Tex., CA $1,905,200. maintenance hangar with shop, apron, Abilene Air Force Base, Inv. No. ENG-41-443-55-33, ABILENE, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids Nov. 18. CD 11/24, under LB.

† **A. J. Rife Constr. Co.,** Box 6725, Dallas 19, Tex. CA $663,431, squadron headquarters bldg., Abilene Air Force Base, Inv. No. ENG-41-443-55-37, ABILENE, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids Nov. 23. CD 11/30, under LB.

▲† **H. B. Zachry Constr. Div.,** Box 2570, San Antonio, Tex., CA $2,111,920, parkway apron and taxiway, incl. 362,000 sq. yd. 15 and 16 in. concrete pavement, Abilene Air Force Base, ENG-41-443-55-31, ABILENE, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Nov. 30, awarded Dec. 3. CD 12/3, under LB.

H. B. Zachry Co. Constr. Div., Box 2570, San Antonio, Tex., CA $831,902. expansion and modifications of Oso Sewer Plant, CORPUS CHRISTI, TEX. City, City Hall, Corpus Christi, Tex. Bids Nov. 10. CD 11/18, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Weitz Co., Inc., 406 Fleming Bldg., Des Moines, Ia., CA, $512,100, general contract HOSPITAL addn., BOONE, IA. Boone Co., Boone, Ia. Bids Dec. 2. CD 11/26.

▲ **Missouri Valley Constructors, Inc.,** Box 801, Leavenworth, Kan., CA Approx. $3,000,000. POWER PLANT addn., (incr. of ½) 20,000 kw. turbo-generator, GREAT BEND, KAN. Western Light & Telephone Co., 1015 Forest Ave., Great Bend, Kan. Awarded Dec. 3. CD 4/13.

Hess Constr. Co., 2211 California St., Topeka, Kan., Owner Builds, $500,000, 48 DWELLINGS, JUNCTION CITY, KAN.

▲ **C. F. Braun & Co.,** 1000 S. Fremont Ave., Alhambra, Calif. CA Est. $6,500,000. chemical processing PLANT between Nacogdoches and Wetmore Rds., 190-acre, SAN ANTONIO, TEX. American Potash & Chemical Corp., 3030 W. 6 St., Los Angeles, Calif., and c/o A. J. Lewis, South Texas Bldg., San Antonio, Tex. CD 10/25.

▲ **McCann Constr. Co., 1813 E. Lancaster St., Fort Worth, Tex., CA, $1,597,000,** 42 one and two story HOUSING UNITS, DENVER, COLO. Denver Housing Auth., 1449 Navajo St., Denver, Colo. Bids Dec. 2, awarded Dec. 3. CD 12/9, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 23 Nevada

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Morrison-Knudsen Co., Inc., & R. A. Westbrook,** 411 W. 5 St., Los Angeles, Calif., CA, $734,413 north apron overlay, Davis-Monthan Air Force Base, ENG-04-353-55-48, TUSCON, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Nov. 23, awarded Nov. 29. CD 11/9.

† **T. C. Bateson Constr. Co.,** Irwin-Keasler Bldg., Dallas, Tex., CA, $845,110, multipurpose wing hangars, 2 aprons and connecting taxiways, roads, parking areas, utilities, Larson Air Force Base, MOSES LAKE, WASH. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Nov. 16, awarded Nov. 24. CD 11/23, under LB.

† **Hitachi, Ltd.,** New Marunouchi Bldg., 4, 1-chome, Marunouchi, Chiyoda-ku, Tokyo, Japan, LB $931,540, 14 turbine governors, The Dalles Dam Power House, Wasco Co., CIVENG-35-026-55-64, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Nov. 30. CD 9/28.

▲ **CALIFORNIA and ARIZONA**—State Div. Hys., 120 S. Spring St., Los Angeles, Calif.,
Fred J. Early Jr. Co., Inc., 369 Pine St., San Francisco, Calif., LB, $1,236,765, est. $1,300,000 girder bridge, approaches across Colorado River near Yuma, Ariz. Bids Dec. 2. CD 11/4.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,
A. Teichert & Son, Inc., 1931 Stockton Blvd., Sacramento, Calif., LB, $727,570, grading, paving 3.1 mi. and 3 rein.-con. bridges between Turner Station and Kingsley Road, San Joaquin Co.;
Frederickson & Watson Constr. Co., 873 81 Ave., Oakland, Calif., LB, $785,555, grading, surf. 2.9 mi. between Mountain Gate and Bass Hill, Shasta Co. CD 11/10;
B & R Constr. Co., 110 Market St., San Francisco, Calif., LB, $248,877, clearing, grubbing roads, utilities at Clear Creek near Happy Camp, Siskiyou Co. Bids Dec. 1.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,
Stolte Inc. and Gallagher & Burk, Inc., 344 High St., Oakland, Calif., LB, $2,040,720, grading, paving, rein.-con. overcrossing, rein.-con. undercrossing 1.9 mi. between University Ave. and El Cerrito Overhead, Alamada Co.;
Gene Richards Inc. and E. M. Underdown & Gene Richards, P. O. Box 1349, Fresno, Calif., LB, $221,020, grading, surf., structural steel bridge 0.5 mi. between Clinton Ave. and Weber and Weldon Aves., Fresno Co.;
Griffith Co., 1060 S. Broadway, Los Angeles, Calif., LB, $160,859, grading, surf. 2.3 mi. between Taft and Weed Creek, Kern Co.;
M. J. Ruddy & Son, 922 J St., Modesto, Calif., LB, $213,111 grading, surf. 3.5 mi. between San Joaquin Co. Line and Oakdale, Stanislaus Co.;
Frederickson Bros., 1259 65 St., Emeryville, Calif., LB, $579,796, grading, surf. 2.1 mi. between Reeves Creek and Hillvilla, Mendocino Co.;
Gordon H. Ball & San Ramon Valley Land Co., Camille Ave., Danville, Calif., LB, $1,888,844, grading, paving 6 bridges 4 mi. between Delano Underpass and Kern-Tulare Co. line, Kern Co.;
R. M. Price Co., 2284 Pine Crest Dr. Altadena, Calif., LB, $539,939. 0.2 mi. road constr., 3 bridges, approaches 8 St. and Southern Pacific R.R. crossing, Colton, San Bernardino Co. Bids Nov. 24.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,
Granite Constr. Co., Box 900, Watsonville, Calif., CA, $1,512,027, grading, paving, 6 rein.-con. bridges 5.1 mi. between Elk Grove and Florin Rd., Sacramento Co. Bids Nov. 17, awarded Nov. 29. CD 11/29, under LB.

† **Fred D. Kyle,** 3617 San Pasqual St., Pasadena, Calif., LB, $319,400, grading, floors, etc. at Sierra Ordnance Depot, HERLONG, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif.

▲ **Healy Tibbits Constr. Co.,** 411 Brannan St., San Francisco, Calif., CA, $1,124,100, installing joint outfall submerged Pipeline No. 3, Joint Outfall "A" Unit 1-D, San Pedro, LOS ANGELES, CALIF. Los Angeles County Sanitation Dist. 2, 2020 Beverly Blvd., Los Angeles, Calif. Bids Sept. 22. CD 10/4, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Grays Harbor Constr. Co., Aberdeen, Wash., CA $500,000. BLEACH PLANT addn., concrete stock tank, 42 ft. high on piling foundation, HOQUIAM, WASH. Rayonier Inc., Hoquiam, Wash.

J. H. Sellen Constr. Co., 228 9 Ave. N., Seattle, Wash., CA $966,042, general contract 2 rein.-con. 4-story DORMITORIES, SEATTLE, WASH. Seattle University, Broadway and Madison Sts., Seattle, Wash. Bids Nov. 10. CD 11/18, under LB.

▲ **Tudor Land Co.,** 7862 S. Western Ave., Los Angeles, Calif., CA $1,237,160, 139 frame, stucco DWELLINGS, Aspan and Clydebank Aves., AZUSA, CALIF. Joy Homes Co., 7862 S. Western Ave., Los Angeles, Calif

La Mirada Woods Bldg. Co., 1166 E. 58 St., Los Angeles Calif. Owner Builds. $687,400 67 frame, stucco

DWELLINGS, La Chelle Rd. and Barnwall St., BELLFLOWER, CALIF. Wm. Bray, 962 N. La Cienega St., Los Angeles, Calif., archt.

Homes of Merit, 9054 E. Garvey St., San Gabriel, Calif. Owner Builds, $733,300, 99 frame, stucco DWELLINGS in San Dimas District, COVINA, CALIF.

E. H. Moore & Sons, 693 Mission St., San Francisco, Calif., CA, $687,192, WOMEN'S RESIDENCE BLDG., Unit No. 2, DAVIS, CALIF. University of California, Davis, Calif. Bids Nov. 10, awarded Nov. 26, CD 11/17, under LB.

Selten Constr. Co., 944 Orange Ave., Coronado, Calif., CA, $500,000, 50 frame, stucco DWELLINGS, Elmwood Dr., Fig St., etc. ESCONDIDO, CALIF. Washington Manor Co., Spreckles Bldg., San Diego, Calif.

J. E. Burrell & Sons, 522 San Francisco Ave., Long Beach, Calif., CA, $539,700, est. $500,000. 38,435 sq. ft. SCHOOL Proj. No. 4, GARDEN GROVE, CALIF. Garden Grove School Dist., 11362 E. Stanford St., Garden Grove, Calif. Bids Oct. 29. CD 11/10, under LB.

Majax Building Co., 11687 San Vicente Blvd., Los Angeles, Calif. Owner Builds, $576,400. 57 frame, stucco DWELLINGS, Canchill St., LAKEWOOD, CALIF.

Paul W. Speer, Inc., 3425 Cahuenga Blvd., Los Angeles, Calif., CA, $755,800, Joshua SCHOOL, LANCASTER, CALIF. Lancaster Elementary School Dist. 808 W. Ave. "F", Lancaster, Calif. Bids Nov. 4, awarded Dec. 2. CD 11/18, under LB.

▲ **Gust K. Newberg Constr. Co.,** Sepulveda, Calif., CA, $1,887,000. general contract RECREATION and TREATMENT BLDGS., Metropolitan Hospital, NORWALK, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Nov. 4, awarded Nov. 24. CD 11/11, under LB.

Flower & Shirley, 215 Princeton Ave., Los Angeles, Calif., CA, $567,600, Dapple-Gray SCHOOL, PALOS VERDES, CALIF. Palos Verdes School Dist., 385 Via Almar, Palos Verdes, Calif. Bids Sept. 10, awarded Nov. 29. CD 9/20, under LB.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲ **B. C., Vancouver**—BA 2/16—City, City Hall, Vancouver, and Prov. Govt., Victoria, separate bids, high level plate bridge and 2nd phase low level swing span bridge adjoining Marpole area with Sea Island, Total est. $10,000,000. Phillips, Barrett & Partners, 1701 West Broadway, engrs. CD 5/17.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Dawson & Hall Ltd.,** 775 Clark Dr., Vancouver, B. C. CA, $1,529,758, Woodlands SCHOOL addn., NEW WESTMINSTER, B. C. Province of British Columbia, Victoria, B. C. C. D. Campbell, Dpt. P. Wks., Victoria, archt.

▲ **Brookfield Constr. Co. Ltd.,** 32 Inglis St., Halifax, N. S., CA, $2,005,000, concrete, steel, brick, stone FEDERAL PUBLIC BLDG., HALIFAX, N. S. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Oct. 20. CD 10/28, under LB.

▲ **W. Daoust Constr. Ltd.,** 286 Montreal Rd., Eastview, Ont., CA, $1,500,000, concrete, steel, brick, stone ARTS BLDG., OTTAWA, ONT. University of Ottawa, Laurier Ave. E., Ottawa, Ont. J. S. LeFort, 86 Greenfield Ave., Ottawa, Ont., archt. CD 10/21, under CA.

Robertson-Yates Corp. Ltd., Box 201, Hamilton, Ont., CA, $643,455, ADMINISTRATION BLDG., 2 LECTURE TRAINING BLDGS., GUARD HOUSE, Army Station, PETAWAWA, ONT. Defense Constr. Ltd., 56 Lyon St., Ottawa, Ont. Bids Nov. 9. CD 10/13.

Peter Ucci & Sons, 61 Lyon St., Toronto, Ont., Owner Builds, $600,000. two 72 and 60-suites, each 3½ story, 45x160 ft. and 45x140 ft., concrete, steel, brick APARTMENTS, 55-57 Broadway Ave., TORONTO, ONT. Venchiarutti & Venchiarutti, 2941 Bathurst St., Toronto, Ont., archts.

Bordeaux Housing, Inc., 1014 Salaberry St., Montreal, Que., Owner Builds, $750,000. HOUSING program, 40 addnl. units, Poincare St. near Edmond St., MONTREAL, QUE.

▲ **Champlain Heights Ltd.,** 6999 Cote des Neiges Rd., Montreal, Que. Owner Builds. $10,000,000, HOUSING DEVELOPMENT, Beaugand St., MONTREAL, QUE. Eliasoph & Berkowitz, 6931 Cote des Neiges Rd., Montreal, Que., archts.

Louis B. Magil Co., 5275 Queen Mary Rd., Montreal, Que., CA, $500,000. OFFICE, Lagauchetiere St. W. near University, MONTREAL, QUE. Remington Rand Ltd., 984 Bay St.. Toronto, Ont. C. B. Dolphin, 880 Bay St., Toronto, Ont., archt

Alphonse Couture, Emile St., Ste. Rose, Que., CA, Est. $700,000, HIGH SCHOOL, STE. THERESE, QUE. School Comm. of Ville Ste. Therese, A. Forget, secy., Ste. Therese, Que. CD 10/19, under LB.

ALASKA

BUILDINGS

LOW BIDS AND CONTRACTS

† **Carson Constr. Co.,** P.O. Box 1153, Helena, Mont., CA $601,086, est. $527,745, two 8-family APARTMENTS, DORMITORY BLDG., COLD STORAGE LOCKER BLDG. and POL LABORATORY BLDG., steel frame, rein.-con. and frame. Inv. 55-29, HAINES, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Dec. 1. CD 11/4.

(Proposal Advertisements see pp. 85 to 87)

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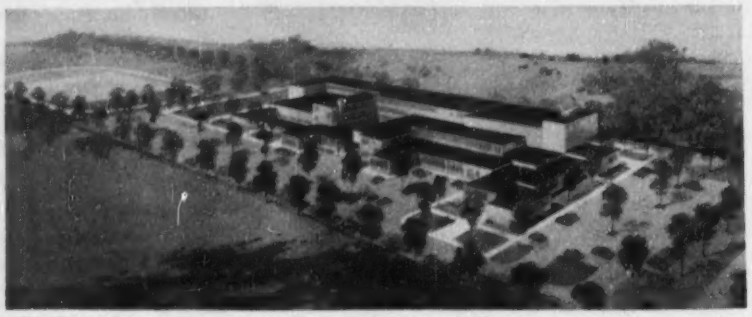


HIGH SCHOOL WITH VARYING GROUND LEVELS, designed for narrow sloping site, leaves room for football field and parking.

Fitting the Building to the Land Pays Off in Ohio

When the Dayton, Ohio, Board of Education opened Belmont High School bids June 22, they found $80,000 saved on their estimate. The total job including site development and extension of utilities will cost $1,766,000, or $11.74 per sq ft (150,350 sq ft), $0.697 per cu ft (2,533,789 cu ft).

Low base bid of $1,216,000 on the general contract is by Wood Construction Company, Bellefontaine, Ohio. It is 4% under second-low, 11% under seventh and high.

Architects Hart-Igleburger & Associates of Dayton attribute the favorable bids received mostly to their adaptation of the building to the natural terrain. The site is about 1,560 ft long with an average width of 440 ft. The existing grade has a varying slope across the tract, with 18 ft maximum difference in elevation.

Present classrooms for 1,400 pupils, and other facilities to provide for a 2,600 total will occupy a one-, two- and three-story school with maximum length 535 ft, maximum width 240 ft. The building is stepped down across the site so as to conform to the natural grades. Intermediate levels connected by steps or ramps link floor levels varying up to eight feet. Space is provided on the tract for car parking, athletic field, and for a future 1,200-student classroom addition.

The design utilizes structural steel frames for the two- and three-story portions, with a floor system of bar joists and concrete on paper-backed wire mesh which is used both as a form and as reinforcing for the concrete. One-story portions have bar joists on wall bearings.

Price alone did not determine selection of building materials. Floor coverings include terrazzo, ceramic tile, and asphalt tile on concrete. Glazed tile wainscoting is used throughout the building. Marble walls are full height of the main lobby and six feet high in the main foyer. All other walls are painted lightweight masonry block. Heavy section, architectural projected, aluminum windows are used throughout.

Work started July 15, is due for completion December 1955.

Prevailing wage rates include $3.32 per hour for marble masons, terrazzo workers and tile setters; $3.19 for electricians; $3.05 for plumbers; $2.67 for painters; and $1.19 for common laborers.

Base bids on the general contract include:

1C	Wood Constr. Co., Bellefontaine, Ohio	$1,216,000
2	J. I. Barnes Constr. Co., Dayton, Ohio	1,264,247
7	James McHugh Constr. Co., Chicago, Ill.	1,369,000

Alternates

	1C	2
Concrete sidewalks	+$4,265	+$3,195
curbs	+10,000	+13,750
Macadam base roads, etc	+13,000	+10,200
Bituminous wearing course	+16,800	+18,000
paved area	+ 5,645	+ 5,200
Monolithic cove floors	− 4,500	− 3,750
Field riveting	+ 2,000	+ 4,500
Omit glazed tile wainscot		
cafeteria area	− 1,100	− 800
stairs & corridor	−20,000	−11,000
cl rms & labs	− 9,500	− 9,100
shops	− 3,000	− 3,300
Marmet aluminum windows*	+ 9,800	+18,000
Steel windows	− 1,500	− 3,500
Wood block floors		
gen metal shop	+ 1,700	+ 1,700
wood shop	+ 1,800	+ 1,750
machine shop	+ 1,400	+ 2,400
graphic arts	+ 2,000	+ 1,400
Gypsum lath	− 6,700	− 5,700
Terrazzo floors, corr*	+ 5,400	+ 5,500

* This alternate was chosen.

Unit prices for work in addition to or less than that called for:

Item	Unit	Unit Price 1 C
Exc, rock	cy	$30.00
earth	cy	1.06
Formwork	sf	0.80
Reinforcing	lb	0.12
Concrete	cy	25.00
Sidewalk	sf	0.50
Curbing	lf	2.50
Paving base	sy	1.20
Paving	sy	1.20

Heavy Year-end Financing Is Trimmed to Size

Bankers fail to bid for two Oklahoma pikes. The cost of borrowing is rising, for more big issues are on the way

From now through January, the revenue bond market will be jumping. As much as $1.1 billion are scheduled for offering to investors, all to finance construction. But this heavy year-end schedule has gotten off to a rather unpromising start.

The parade began last week with a sale of $50 million of New York State Thruway revenue bonds to underwriters at a cost of 2.68%—considerably lower than the 3.07% interest rate on the $300-million issue of last June.

Then the going got tougher. An underwriting group headed by First Boston Corp., which had been expected to bid on three issues of Oklahoma Turnpike bonds totaling $214 million, decided to bid for only one. It took $68 million of bonds financing the Northeastern Turnpike, an 88-mi extension of the Turner Turnpike from Tulsa to the Missouri line, at a steep cost to the borrower of 3.81%. The underwriters failed to bid on a 97-mi project from Oklahoma City to the Kansas line, and on the proposed 127-mi pike from Oklahoma City to the Texas line. All three toll roads were designed to be individually self-supporting.

• **Too much competition**—Apparently this last-minute decision was based on the huge volume of turnpike and other revenue issues scheduled to come up shortly. Wilbur Merritt, a vice president of First Boston, said that investors had "absorbed as many turnpike bond issues as possible at the moment" and that although the other two issues were sound, their financing would have to wait for a more favorable time. De Leuw, Cather & Co., consulting engineers, and Parsons, Brinckerhoff, Hall & Macdonald as traffic engineers had estimated average annual revenue for the other two projects would be at somewhat lower ratios to financing costs. Revenue for all three pikes was expected to be relatively low in the early years, but to pick up later.

Plans are to put out bids for the Northeastern Turnpike next spring, with construction beginning by June 1955. The engineers estimate that the turnpike can be finished and open for traffic before July 1, 1957. During the first full year of operation to June 30, 1958, estimates are that net revenue would cover interest 1.62 times—an adequate coverage by Wall Street standards.

Incidentally, bonded cost per mile for the Tulsa project is $773,000, compared with $432,000 per mile for the earlier Turner Turnpike. The wide difference is partly due to more difficult terrain features and to more road crossings.

• **Unsold inventory**—A fact that may have counted heavily with the First Boston group is that dealers last week were advertising for sale $263 million of unsold general-obligation and revenue bonds. Of this, $143 million are still carried by underwriting syndicates which have failed to close out past issues. Many of them are small, high-grade issues. Wall Streeters say the reason why so many of these bonds have piled up is that bond men have had to concentrate on selling the big revenue issues.

• **New Orleans project**—On the same day that the Oklahoma financings were trimmed down, another underwriting group—the only bidder—bought a $46-million issue to finance the Greater New Orleans Expressway. Considering the security behind the bonds, the 4.09% borrowing cost was high. This project consists largely of a 24-mi bridge across Lake Pontchartrain, north of New Orleans, which will be the longest in the world. The project is expected to encourage development of the only large potential suburban area near the city. In addition to tolls, it is backed by a share in the auto license fees of neighboring parishes, which engineers estimate will rise from about one-third of expected toll revenues to nearly one-half.

• **More big deals coming**—Also on the same day last week, Connecticut announced it would offer another $100-million block of expressway bonds on Jan. 18. This date had previously been unsettled. The biggest issue of all, $355 million of New York State Power Authority bonds, has just been postponed from this week to next week. And the Illinois Turnpike Authority has previously indicated it will offer $390 million in bonds within the next few weeks.

Though investors' appetite for revenue bonds is tremendous, it is easy to see why the prospect of these king-sized issues made it very expensive to borrow last week and caused postponement of the two Oklahoma toll roads. With such a large supply of revenue bonds impending, investors can afford to be coy. And underwriters are unwilling to take long chances, for fear of getting stuck for a long period of time with many millions of dollars in bonds.

$200 Million in Permits For Ft. Lauderdale in Decade

During the 10 years from 1945 through 1954, the city of Ft. Lauderdale, Fla. has licensed more than $200 million worth of building construction. During the same period its year-round population more than doubled—it was less than 18,000 in 1940 and is estimated at 57,000 now. On a per-capita basis, this is probably some kind of national record for new construction.

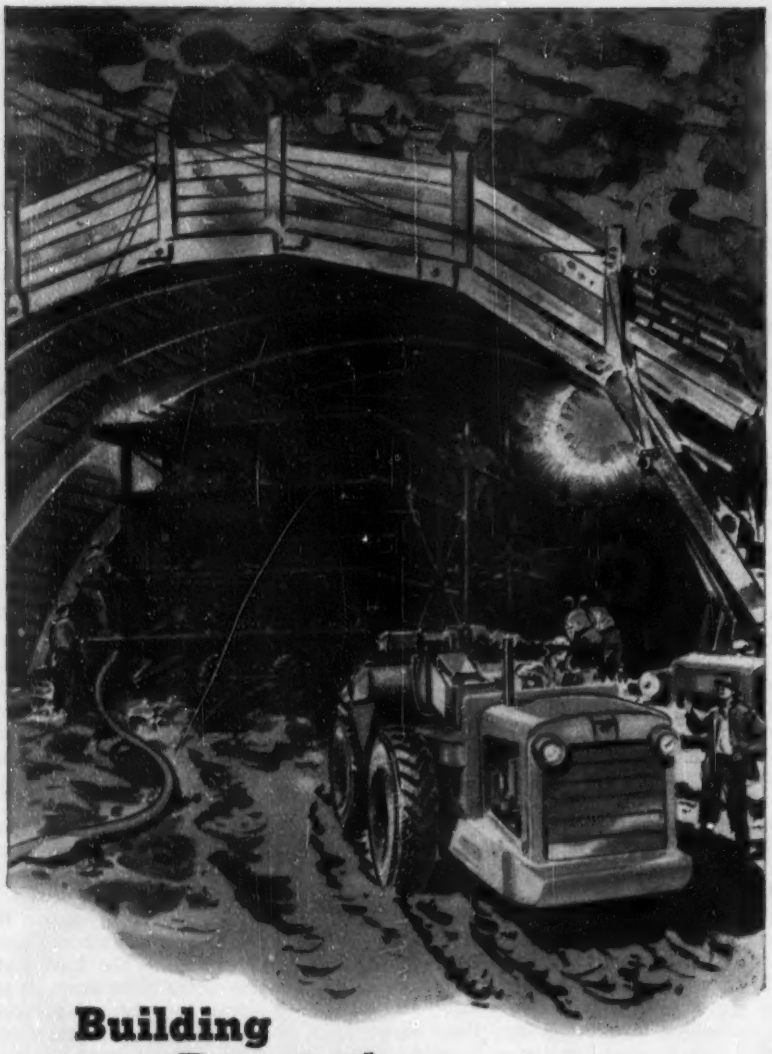
Reason for the fast gain, of course, is that Ft. Lauderdale is right in the path of the Florida resort boom, moving northward along the East Coast from Miami, a few miles away. It has a large winter population, but only part of the construction is due to vacationists. Thousands of people are moving into this area to live all year.

• **Big projects**—This year, for the first time since Ft. Lauderdale's postwar building boom started, tract builders have gone outside the city limits. Largest development is Coral Ridge, just north of the city (ENR Oct. 8, p. 266). This project may run from $50 million to $60 million of construction within the next few years. It includes housing developments, a mile of ocean front set aside for hotels and apartments, a $1-million shopping center.

Another project—the Miramar development—plans 4,000 homes, water and sewer systems, shopping center, hotels, for a total estimated cost of $36 million.

Ft. Lauderdale's fast growth has raised problems of keeping municipal services abreast of building developments. In the case of sewerage, for instance, a $22-million program has

(*Continued on page 78*)



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been laid out. The first step in this program ran into trouble at the election early this month when less than 50% of eligible freeholders turned out to vote, thus automatically defeating a $7.5-million bond issue. Another election will have to be scheduled. This will delay building in areas where sewage systems are overtaxed.

PHA Cuts Sales Prices on War Housing After Reappraisal

After Connecticut congressmen had suggested a reappraisal, the Public Housing Administration last week reoffered Brady Homes, federally owned war housing development in Bridgeport, Conn., at reductions from 5% to 13% below price levels at which it originally offered the units last spring. PHA also cut the 10% down-payment requirements to 5%.

The 399 units in the Lanham Act project were last offered for sale in March, with first preference to veteran occupants. Then PHA postponed the sale to review its offering prices, after both Connecticut senators and two representatives asked for a reappraisal.

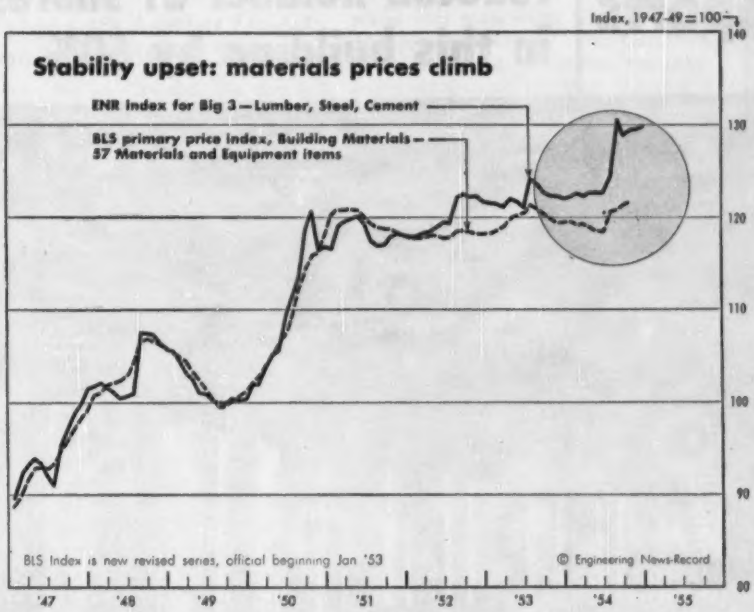
The project originally had been offered for sale in 1948, but the sale was called off after deposits had been accepted from many tenants. PHA has decided that the rise in real estate values since 1948 has made it impossible under the law to offer these homes for sale again at 1948 prices. The law states that such units cannot be sold for less than present fair market value.

Typical offering prices on single-family homes range from $6,200 to $6,600, and on two-family houses from $7,000 to over $10,000.

Growing Demand for Cement And Plywood Pushes Prices up

Growing demand for cement and plywood is pushing up prices of these key construction building materials. Last week, major cement producers in the northeastern U.S. announced a price boost of 15 cents per bbl., effective Jan. 1, and some northwestern plywood manufacturers have raised prices. Mill price of ¼-in. panels, the so-called "bellwether grade," is being quoted in some places at $88 per Mftbm, up from $85. Other grades have been boosted by an average of $4.

The price boost in cement in the Northeast brings prices there into line with cement prices in the rest of the country. A round of increases began last summer in the South and Middle West.



Materials Indexes Jumped This Year

The second half of this year brought a sudden end to the stability in prices of construction materials that had lasted for 11 months. During this period, the ENR Materials Price Index climbed 6%. During the four months from July to November—latest period with available figures—the Bureau of Labor Statistics Building Materials Price Index rose 3% (chart, above).

A big increase in lumber prices, plus a big boost in steel and smaller rises in cement started ENR's index moving up in mid-1954 (ENR Dec. 9, p. 108). The BLS index shows a more moderate increase because it covers such a wide range of materials and equipment—classed in 57 categories. The three materials used in ENR's index—structural steel, lumber, and cement—have a combined weighting of only 42% in the BLS index, which is designed primarily to show price trends in housing. So wide movements in their prices tend to be offset by diverse movements in the other items used in the index.

As the chart shows, ENR's index is more sensitive than the BLS indicator, and tends to be ahead on basic changes in price trends. The chart shows that the two series keep quite close together. But since 1951 the ENR index has climbed more sharply, reflecting the bigger increases in prices of its three materials. These boosts have been offset partially by smaller advances or by declines in the wide variety of items covered by BLS. During this period there have been declines in asphalt, lumber, and paint materials.

Capital Spending to Drop Slightly

Businessmen expect to cut their spending for plant and equipment in the first quarter of next year slightly from this quarter's level, according to government figures released last week.

The current annual rate of spending is about $26.6 billion, while during the next quarter it is forecast at $26 billion. That would be the lowest first-quarter capital spending volume since 1951's level of $25.5 billion.

Volume of spending has declined in each quarter since the second quarter of 1953. But government economists note that the decline is moderate and that volume is still at a high level.

Manufacturers expect to trim their spending somewhat in the next quarter, as they have all through 1954. Durable goods industries will spend an estimated $1,149 million, compared with $1,366 million in this quarter. Non-durable goods producers are expected to spend about $1,352 million, compared with $1,596 million in this quarter. Utilities plan a fairly sizable reduction from fourth-quarter volume: $858 million, compared with $1,134.

During the next quarter, manufacturers plan to spend at an annual rate of $10.8 billion, compared with $11.9 billion in this year's first quarter.

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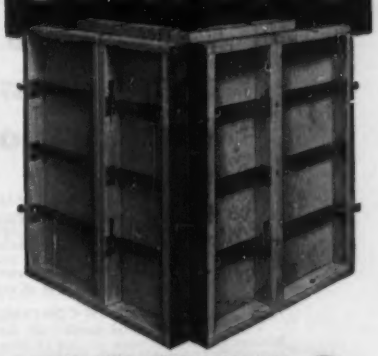

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Chicago Adds Another Project: Seven-Mile Calumet Skyway

The City of Chicago has decided to put another entry in the year-end revenue bond parade (page 77). On December 22, it plans to offer an $88-million issue of Calumet Skyway Toll Bridge Bonds, to be secured by tolls.

The money would finance a seven-mile elevated toll expressway from the terminus of the Indiana Turnpike to connect with the Loop and Michigan Ave. The idea is to prevent a traffic jam in Chicago's narrow city streets at the end of the turnpike, now under construction. The project has received some criticism in the past from those who felt it would only move the traffic jam into the Loop.

Now, however, the situation has changed somewhat. The Illinois Turnpike Authority is planning a beltline around Chicago from a point near the Indiana line to the Wisconsin border as part of its big financing, scheduled to take place within a few weeks. This would drain off traffic from the Indiana Turnpike headed for points west and north of Chicago itself. It still, of course, does not change the familiar problem of increasing private auto traffic in the downtown area.

California Frames Five-Year Master Plan for Construction

California's Construction Planning Committee has recommended a $495-million, five-year master plan for the state.

Top priority would go to $365 million worth of projects to fill urgent needs for new educational, mental hospital, and penal facilities. Other projects: field stations for the departments of agriculture and natural resources, new office buildings. Other construction is slated for educational institutions.

Texan Seeks Federal Backing For Canadian River Project

The federal government ought to insure bond issues for water conservation projects, as it now insures home mortgages. That's the argument of Rep. Walter Rogers, a Texas congressman. He says he'd be glad to introduce a bill when Congress meets in January.

Rogers says he is thinking of the proposed $85-million Canadian River project in Texas. The river would be dammed in the Panhandle region, providing 11 cities in the high Texas plains area with water through about 320 mi of pipelines. The Canadian River Municipal Authority has been trying to finance the plan through a regular bond issue. The idea is that a federal guarantee of some kind would help make the bonds more readily acceptable to investors.

Says Rogers: "For decades the government has helped in the handling of surplus water problems through flood-control measures calling for levees and dams. I see no difference in principle in helping an area develop new water supplies that will increase the productivity of the region and add to the basic wealth of the nation."

Williams Asks Bigger Highway Program for Michigan in 1955

Michigan's Governor, G. Mennen Williams, has proposed that the State Highway Department telescope its 1955 and 1956 construction programs into a single year of spending $149 million for better roads. This would give the state the biggest highway program in its history.

Williams wants a bond issue proposed and submitted to voters at the April 4 election, without waiting for a forthcoming report by the Good Roads Federation, which is not expected before April.

Opinion in Michigan is divided as to how the money should be spent. Some want the funds spent entirely for improvement of state turnpike highways, while others want the cities and counties to have a share in the benefits.

Total Work in Place Will Go Above $50 Billion, Says AGC

The Associated General Contractors expects that construction put in place this year will total $36 billion, with repair and modernization work bringing the total above $50 billion.

James E. Marshall, AGC's executive director, told this to the Master Builders of Iowa at their convention in Des Moines last week. He added: "About $1 in every $7 spent for goods and services in the U. S. this year is being invested in construction."

Business Briefs . . .

• **American Radiator & Standard Sanitary Corp.** is going to step up its expansion program for the next five years, according to its president, Joseph Grazier. In 1955, it may spend $15 million or $16 million for new plant and for modernization, compared with

(*Continued on page 82*)

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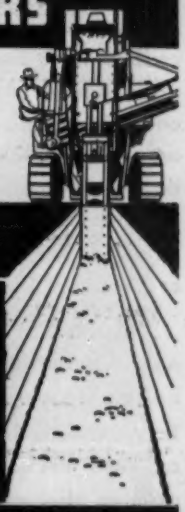
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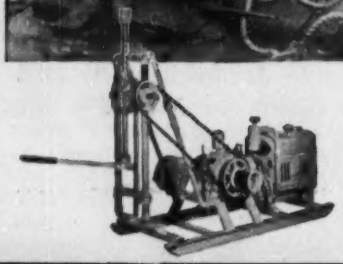

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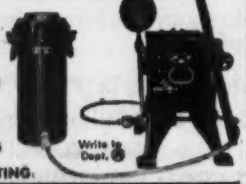

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BUSINESS AND FINANCE

about $6.5 million this year. During the next five years, the company expects to spend $60 million or more. It is counting on continued high volume of construction.

• **Low-power cooler**—General Electric Co. plans to sell a new ½-hp room air conditioner next year that it says will use less current than a flatiron or toaster. Users of air conditioners up to now have had trouble with overloaded wiring systems.

• **October structural steel bookings** were 207,000 tons, about the same as September and 8% above a year ago, according to the American Institute of Steel Construction. Shipments totaled about 255,000 tons, down 4% from the previous month. For the first 10 months of this year, bookings are down about 13%. Shipments are up about 3%.

• **Plant expansion in India** will be financed by a new investment company, Industrial Credit & Investment Corp. of India. Equity capital will be $10 million, put up by Indian, British, and American investors, plus a $10-million loan from the World Bank and a $15-million deferred credit from the Indian government. American investors include: Bank of America, Westinghouse International Corp., Olin Mathieson Chemical Corp., and the Rockefeller brothers.

• **Interest rates** probably will rise in the next few months, economist Jules I. Bogen told the recent convention of the National Assn. of Mutual Savings Banks. His reasons: high demand for mortgage money, upturn in business, and a decline in personal saving.

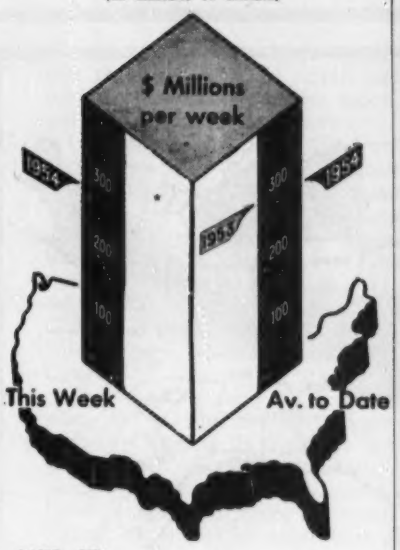
• **Safeway Stores** plans $7-million regional distribution center at Garland, Texas, not far from Dallas.

• **Atomic power plant** may be built by Consolidated Edison Co., of New York, on a site near Peekskill, N. Y., on which it had planned to build a conventional plant.

• **Concrete paving awards** for November were 56% ahead of the same month last year, says the Portland Cement Assn. Awards for roads totaled more than 1.9 million sq yd, up 8.2% over the previous year. Awards for streets and alleys were almost 1.7 million sq yd, up 20%. But the big gain was in airport awards, which reached 1.5 million sq yd as against only 100,000 last year.

Activity This Week

As reported to ENR
(in millions of dollars)



* 1953—655

Amount of contracts let

	This Week	Cumulative 50 wks 1954	1953	% chge
Federal	$22.6	$1,234.8	$1,362.0	−9
State and municipal	105.5	4,774.3	4,806.5	−1
Total public	128.1	6,009.1	6,168.5	−3
Total private	143.7	7,862.3	8,441.0	−7
U. S. total	$271.8	$13,871.4	$14,609.5	−5

Contracts by type of work

Waterworks	$11.6	$237.9	$234.9	+1
Sewerage	10.4	377.9	410.8	−8
Bridges	9.1	485.7	658.9	−26
Highways	20.0	1,815.7	1,731.9	+5
Earthwork, waterways	2.5	302.3	342.6	−12
Buildings:				
Public, excl. hsg.	39.9	1,690.3	1,644.7	+3
Housg., public	5.2	249.5	372.6	−33
Housg., private	32.8	4,131.9	3,359.6	+23
Commercial	22.4	1,378.9	1,117.8	+23
Industrial	30.6	1,812.9	3,107.7	−42
Unclassified	37.3	1,388.4	1,628.0	−15
Total	$271.8	$13,871.4	$14,609.5	−5

NOTE: Minimum size projects included are: Waterworks and waterways, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

(millions of dollars)

	Week of Dec. 9 1954	Cumulative 49 Wks 1954	% chge '53-'54
Corporate securities	$3.0	$2,520.8	−36
State and municipal:			
All except housing	45.3	5,114.5	+24
Housing	...	91.0	−65
Federal loans	1.0	110.9	+0.3
Federal aid	...	673.0	−13
Total non-federal	$49.3	$8,510.2	−7
Federal appropriations:			
In U. S.	...	$2,073.3	+32
Outside U. S.	...	33.2	+15
Total new capital	$49.3	$10,616.7	−2

ENR cost and volume indexes, 1954

		Base years = 100 1913	1926	1949
Construction cost	12/9	643.27	309.22	134.85
	12/2†	643.31	309.24	134.86
Building cost	12/9	456.80	246.93	129.85
	12/2†	456.77	246.92	129.84
Volume	Nov.	522	212	151
	Oct.	423	172	122

† Official monthly index for Dec. 1

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Dozer-Rooter easily adjusts to four rooting depths—9", 15", 21" or 27".

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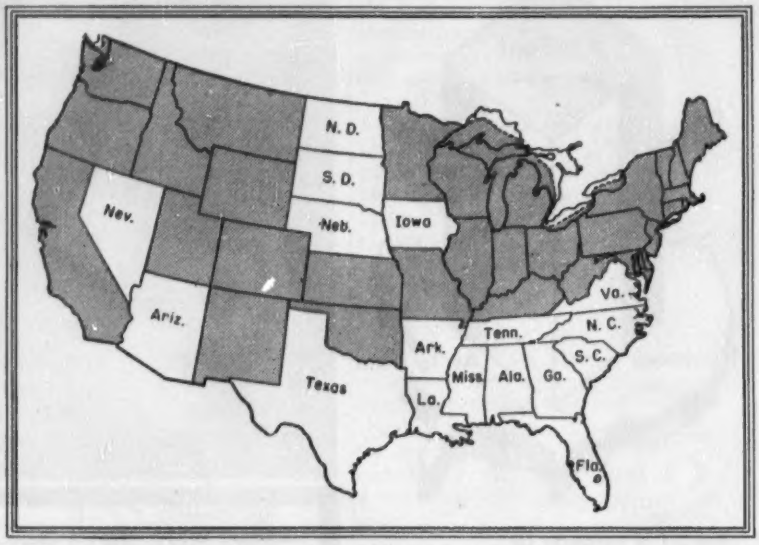

Right-to-work laws, now in seventeen states, are . . .

A Key Issue in Labor's 1955 Program

Out of the CIO's annual convention in Los Angeles last week, came new support for labor's fight against right-to-work legislation. It came from an unexpected quarter—Labor Secretary Mitchell, who "categorically" aligned himself with the opposition.

The issue—long prominent on organized labor's legislative agenda—has rapidly been gaining momentum. A nationwide attack has been launched on both national and local levels. Ahead lies a vigorous fight to hold the line on union security.

At present, 17 states, by constitutional amendment or legislative fiat, have right-to-work laws (see map); three (Maine, New Hampshire, Delaware) have tried—and repealed—them; three others (California, Massachusetts, New Mexico) put the issue before their voters who turned it down.

Activity on the local level centers around the fact that all but four legislatures (Kentucky, Louisiana, Mississippi, Virginia) meet in 1955. Labor's efforts will be directed toward the repeal of present laws—and the prevention of new ones.

Already characterized as "battleground" states are: California, Colorado, Connecticut, Kansas, Iowa, Minnesota, Oklahoma, Oregon and Wyoming, in each of which labor—as a result of November elections—sees a sympathetic governor; Ohio and Maryland, both doubtful; and Idaho, whose new Republican governor is believed to favor a right-to-work law. To these, labor adds Missouri which did not have a gubernatorial election.

Principal labor opponent is the Chamber of Commerce. In Missouri, its efforts to generate support for the enactment of such a law met a united labor front; the state CIO, AFL and railroad organizations are working together to alert all Missouri unions to join the fight. California's AFL led off its recent conference of labor journalists with criticism of right-to-work schemes. In Colorado, the state chamber launched its campaign in October, and in Oklahoma labor scored a triumph when the Tulsa chamber failed this fall to get the state legislative council to consider a right-to-work law.

Under the laws, contracts which establish union membership as a prerequisite to employment are unlawful. Somewhat misnamed, they confer no "right-to-work"—they merely say that denial of employment cannot be based on non-union membership. The AFL brands them as "a serious threat to sound and democratic labor relations in America"—and Father William J. Kelley (for 10 years chairman of the New York State Labor Relations Board) has gone so far as to call them "morally wrong." To most labor groups, union security contracts—now limitedly permissible in states without right-to-work laws—are considered vital to effective collective bargaining. The

Chamber of Commerce takes the position that unions should recruit and hold their members on their merits, and not by a monopolistic device.

On the national level, labor authorities see little likelihood of a successful attack. For this would entail knocking Sec. 14(b) out of the Taft-Hartley Act—the section that leaves the right-to-work issue up to the states. With the House Labor Committee manned by conservative Rep. Graham Barden of North Carolina, labor expects little from the 84th Congress.

The issue, however, will be raised when AFL's Legislative Council presents to Congress its five-point program to curb what it calls "industrial piracy"—the movement of industries to other areas, principally the South. Repeal of Sec. 14(b)—point four of the program—would, says labor, wipe out the right-to-work laws, tend to minimize wage differentials, and "stanch the industrial hemorrhage."

Proposed AFL-CIO Merger Dominates CIO Convention

Uppermost in the minds of CIO members attending their 16th annual convention, was the future of their organization.

On the surface, merger prospects with the AFL looked good. The plan was unanimously approved in principle, with no strings attached. AFL president Meany wired his support, and CIO president Reuther assured members he'd work for unity on a "sound, principled and honorable basis."

Underneath, however, there was an atmosphere of caution. "I don't think anybody has any magic that can accomplish labor unity overnight," said Reuther.

Of chief concern is AFL-CIO's no-raiding pact, listed by Reuther as the "cardinal principle" upon which unity must be built. Although this is backed by most CIO unions—except steel—many in the AFL have shied away from it (ENR Nov. 11, p. 74). Meany says he can't force them to sign.

In seeking unity, Reuther won't trade CIO's "basic principles for political expediency." He wants to continue the autonomy of individual unions and still provide a means for elimination of internal corruption. On a higher plane, he looks for an organization aware of its "social and moral responsibilities" to the nation. In these, few saw a threat to merger meetings scheduled in January.

OFFICIAL PROPOSALS

Bids: December 29, 1954

Invitation To Bid

Sealed bids addressed to the Public Works Commissioner of the State of Connecticut for:

ITEM #14 SALE OF EQUIPMENT IN OLD POWER HOUSE
NORWICH STATE HOSPITAL
NORWICH, CONN.
PROJECT—B/A-K-91
Dwg. & Specs. ready—Dec. 13, 1954
Bid Opening—Dec. 29, 1954

will be received in accordance with the requirements of the printed specifications, and thereafter publicly opened and read aloud as stipulated. Performance and Payment Bonds to be furnished by the bidder awarded the contract shall be as stipulated. The Public Works Commissioner reserves the right to waive technical defects or to reject any and all bids. As Security, each bid must be accompanied as directed in the specifications.

Drawings and Specifications may be obtained in Room 469, State Office Building, Hartford, Connecticut or by addressing such requests to the COMMISSIONER OF PUBLIC WORKS, ROOM 491, STATE OFFICE BUILDING, HARTFORD, CONNECTICUT. (ALL REQUESTS MUST BEAR THE FULL PROJECT NUMBER).

R. G. MACY—COMMISSIONER
PUBLIC WORKS DEPARTMENT

Bids: January 25, 1955

The Mississippi River Bridge Authority
Contract No. 3

INVITATION TO TENDER

The Mississippi River Bridge Authority of the State of Louisiana invites proposals for the construction of the Substructure of the River Crossing for the Greater New Orleans Bridge over the Mississippi River at New Orleans, Louisiana. Sealed proposals for the Work described will be received by The Mississippi River Bridge Authority in the office of the Authority, 422 City Hall Annex, New Orleans, Louisiana, until 10:00 A.M., Central Standard Time, January 25, 1955. Proposals will not be received after this hour. At 10:00 A.M. of the same day and date, the proposals will be publicly presented, publicly opened and publicly read in the Commission Council Chamber, City Hall.

This Contract No. 3 covers the furnishing of all materials for and the construction of the four piers, designated I, II, III and IV, supporting the river spans of a four-lane highway bridge in the City of New Orleans over the Mississippi River in the vicinity of Thalia Street in New Orleans and Bringier Street on the Algiers side, New Orleans, a willow mattress and timber fender for Pier II, and incidental construction.

A fuller description of the work to be done and of the requirements, provisions, and details thereof is given in the Contract Drawings, Contract Documents and Specifications, copies of which are on display in the office of the Authority, Room 422, City Hall Annex, New Orleans, Louisiana, and in the offices of the Engineers, Modjeski and Masters, 2400 Canal Street, New Orleans, Louisiana, and State Street Building, Harrisburg, Pennsylvania, or may be obtained from said latter office upon the deposit of Twenty Dollars ($20.00) per set. Deposit checks shall be made payable to Modjeski and Masters.

No Proposal will be received unless accompanied by a certified check satisfactory to the Authority drawn upon a National or Louisiana State Bank or Trust Company having an office or place of business in New Orleans, Louisiana, and payable to the order of The Mississippi River Bridge Authority for the sum of Five Hundred Thousand ($500,000) Dollars as security for the proper execution of the Contract. Such check must not be enclosed in the sealed envelope containing the bid but must be delivered to the office of the Authority. Proper receipt for the deposit will be given by the Authority.

THE MISSISSIPPI RIVER BRIDGE AUTHORITY
Neville Levy, Chairman

Bids: December 30, 1954

State Of New Jersey
State Highway Department
Trenton

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

OFFICIAL PROPOSALS

ROUTE 29 FREEWAY, SEC. 13-A

Route 29 Freeway, Section 13A, from Parkside Avenue to Calhoun Street; Grading, Bridges and Paving, in the City of Trenton, Mercer County. Federal Project No. U-198(1). Length 1.581 miles. The principal items of work are:

Estimated:	Roadway Items
17,471	cu. yds. Roadway Excavation-Earth
44,887	cu. yds. Wet Excavation
17,163	sq. yds. Pavement Excavation
335,569	cu. yds Borrow Excavation
10,000	cu. yds. Ditch Excavation
26,000	cu. yds. Subbase
14,444	sq. yds. Macadam Base Course, 7" thick
22,693	sq. yds. Macadam Base Course, 4" thick
24,783	sq. yds. Penetration Macadam Intermediate Course, Hot Application, 3" thick
12,354	sq. yds. Pavement Type MA-BC-1
24,780	sq. yds. Pavement Type MA-BC-2
35,542	sq. yds. Concrete Pavement Surface, Rein. 9" thick
1,596	lin. ft. Clay Pipe
10,284	lin. ft. Reinforced Concrete Culvert Pipe
128	Manholes and Inlets
39,875	lin. ft. White Concrete Curbs, various sizes
Lump Sum	—Demolition of Buildings and Garages Electric Lighting and Sign Installation
	Bridge Items
2,784	cu. yds. Concrete in Structures
183,265	lbs. Reinforcement Steel in Structures
3,116	sq. ft. Ramdom Ashlar Masonry

Bids for the above will be received at the office of the state Highway Department, in the CAFETERIA, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Thursday, December 30, 1954, at TEN o'clock (10:00 A. M. EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the pre-qualification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plan and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 413, 82nd Congress and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 6-12 North Willow Street, Trenton, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished upon payment of a fee of FIFTEEN DOLLARS ($15.00) which will not be refunded for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed:
STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

(Continued on following page)

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $1.80 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

(Continued from preceding page)

Bids: January 11, 1955

New Jersey Turnpike Authority

CONTRACT NO. N-21

Proposals are invited for Contract No. N-21 which involves the construction of the substructure for the East Viaduct, extending from just west of Communipaw Avenue to just north of Grand Street in Jersey City, Hudson County, New Jersey, and other incidental work, all in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

The principal items of work include:

Open Foundation Excavation	17,600 Cu. Yds.
Concrete	20,000 Cu. Yds.
Reinforcement Steel	2,250,000 Lbs.
Untreated Timber Piles	34,000 Lin. Ft.
Steel Piles	14,000 Lin. Ft.
Cast-In-Place Concrete Piles	110,000 Lin. Ft.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'clock Eastern Standard Time on the morning of January 11, 1955, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after December 10, 1954, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Fifteen Dollars ($15.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

December 9, 1954

Bids: January 11, 1955

Contract HP-110.005

THE PORT OF NEW YORK AUTHORITY
HOBOKEN - PORT AUTHORITY PIERS
REHABILITATION OF THIRD FLOOR AND HEADHOUSE ROOF

Sealed proposals for the rehabilitation of the third floor and headhouse roof of the Hoboken - Port Authority Piers at Hoboken, New Jersey, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, January 11, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, December 16, 1954

Bids: January 11, 1955

Contract PN-250.005

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
WATER MAINS AND HYDRANTS

Sealed proposals for furnishing and installing water mains and hydrants at Port Newark, New Jersey, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, January 11, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, December 16, 1954

Bids: January 11, 1955

Contract SI-110.001

THE PORT OF NEW YORK AUTHORITY
TRADE PROMOTION OFFICE

Sealed proposals for the furnishing and installation of exterior and interior finishes for the Trade Promotion Office at 32 Broadway, New York, N. Y., will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, January 11, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, December 16, 1954

Bids: January 7, 1955.

Spring Valley Water Works

Sealed bids will be received by the Spring Valley Water Works and Supply Company at their office in Spring Valley, New York, until two o'clock P. M. Eastern Standard Time on the seventh day of January, 1955 for furnishing materials and performing the labor for the construction of approximately two and two-tenths (2.2) miles of roads including approximately 340,000 cubic yards of excavation and embankment, 2,200 cubic yards of concrete, 60,000 square yards of riprap, permanent type asphalt macadam pavements, culverts and guard railing in the Lake de Forest Reservoir area.

Copies of the Plans and Specifications, may be examined at said office or at the office of the Consulting Engineers, Buck, Seifert and Jost, 112 East 19th Street, New York City, and copies thereof obtained upon payment of fifty ($50.00) Dollars for each set. Any bidder, upon returning such set or sets within twenty (20) days after the date on which bids are received and in good condition, will be refunded his payment or else the entire deposit will be forfeited.

Each proposal must be accompanied by a certified check or bid bond from a reliable surety company in an amount equal to ten (10%) percent of the proposal. The certified check will be retained to pay for any damage or loss to the Owner, or the liability bond will accure in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal. Acceptance of the bid will be contingent upon the fulfillment of this requirement by each bidder.

SPRING VALLEY WATER WORKS
AND SUPPLY COMPANY
By George H. Buck, President
Buck, Seifert and Jost
Consulting Engineers

Contractors Watch This Section —

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

Bids: December 23, 1954

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 3rd day of DECEMBER 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, N. F. RONAN, District Engineer (Acting), 353 Broadway, Albany, N. Y.						
Albany Greene Schenectady	CT 54-6 MT 54-9	New York State Thruway–Catskill and Mohawk Sections 1, 2, 3, 3A, 5, 6, 7 and 8 (Ulster County Line to Montgomery County Line)		Furnish & Erect 408,000 L. F. Fence	$32,600 Plans $15	$597,000
DISTRICT No. 3, WM ROBINSON, District Engineer, 301 E. Water Street, Syracuse, N. Y.						
Onondaga	FAC 54-16 FGSH 54-17	City of Syracuse: State Fair Boulevard Lake Onondaga West Shore Development, Northwest Arterial Connection (Cont. 1) Proj. U & UG991(4)	(0.39 Acc.) 1.30	Grading, Drainage & Sand Drains R. R. Sep. Comp. I-Beam 212'	$120,000 Plans $25	2,326,000
DISTRICT No. 5, C. R. WATERS, District Engineer, 65 Court Street, Buffalo, N. Y.						
Erie	FA NTC 54-2	New York State Thruway–Niagara Section–Sub. N4 (Court St. to Main St.); Fuhrmann Blvd. Interchange Proj. U865(6)	(0.69 Acc.) 0.82	Two Cnc. Cem. Conc. Pvt., 2 at 37' Var. Wide=0.155 Mi., Asp Conc. Ty. 2A (Access)=0.60 Mi.; 58 Span Cem. Conc. Paved Viaduct=0.665 Mi.	$420,000 Plans $100	7,639,000
DISTRICT No. 6, J. H. THOMAS, District Engineer, 30 West Main Street, Hornell, N. Y.						
Chemung	FATC 54-4	Horseheads Village, FASH 53-5, 5162: Elmira-North Elmira Ext. FASH 54-16: Horseheads-Corning, SH 358 Elmira-North Elmira, SH 1378; Horseheads-Montour Falls, SH 5208: Elmira-Horseheads Connection, Pt. 2, FASH 54-15: Horseheads Village: South Main & Main Streets, SH 9228; Proj. No. U221(7); U479(12); U661(5)		Traffic Signal & Lighting System	$3,500 Plans $10	50,000
Steuben	FARC C54-106	City of Corning: Denison Parkway Extension F.A.C. 49-4 Proj. U225(9)	0.21	Storm Water Sewer	$2,400 Plans $10	41,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, N. Y.						
Franklin	FARC 54-107	Nicholville-Dickinson, Pt. 2, SH 9265 Dickinson-West Bangor, Pt. 2, SH 9076 Malone-Dickinson, Pt. 2, SH 1383 Proj. S 305(3)	0.99	Asp. Conc. Opt.=0.97 Mi. Misc. Work=0.02 Mi.	$11,000 Plans $15	205,000
DISTRICT No. 8, J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Ulster	CT 54-4	New York State Thruway–Catskill Section–Subs. 1 & 2 (Kingston-Saugerties-Greene Co. Line)	9.77	Furnish & Install 51,600 Fencing	$4,500 Plans $10	79,000
Westchester	FA NETC 54-10 FA NET 54-11	New York State Thruway–New England Section, Sub. 4 (Mamaroneck Av.-Central Av.)Proj. F and FI-1068(8)	(2.37 Acc.) 2.84	9 Cem. Conc. Pavt., 2 at 37' Var. Wide=4.20 Mi. Asp. Conc., Opt.=0.82 Mi. Misc. Work=0.19 Mi. 7 Hy. Sep. Comp. I-Beams, 169', 172', 172.2', 107.7' 114', 62' & 119.2'; 2 Brs. Reinf. Conc. Slabs 86.8' & 36'; 1 R.R. Sep. Comp. I-Beam, 182'	$350,000 Plans $100	6,485,000
DISTRICT No. 9, F. W. DONOVAN, District Engineer, 71 Frederick St., Binghamton, N. Y.						
Broome	FARC C54-108 FAC 54-17	Binghamton City: Vestal Ave. Bypass, FAC 49-8 Binghamton City: Court St.–Rte 17 Connection Susquehanna River Bridge Project U1019(4)	(2.28 Acc.) 0.91	Asp. Conc. Type 2A=0.91 Mi. Asp. Conc. Type 2A (Access)=2.17 Mi. Asp. Conc. Opt. (Access)=0.11 Mi. Br. 5 Span Deck Girder 642' Hy. Sep. Comp. I-Beam 165.4'	$250,000 Plans $50	4,460,000
Delaware	54 BWS 3, 3D, 10, 10A, 10AT	New York City Board of Water Supply (Pepacton Reservoir) Rds. 3, 3D, 10, 10A and 10AT	7.34	Bit. Mac. Ty. 1 (Pen. Meth.)=7.30 Mi. Found. Course Gravel=0.04 Mi. 2 Box Brs. 33.8' and 20.5'	$91,000 Plans $25	1,658,000
Sullivan	RC 54-102	Narrowsburg-Callicoon, Pt. 3, S.H. 8449 Callicoon-Long Eddy, Pt. 2, S.H. 8494	0.32	Repair, Clean & Paint 2 Bridges	$1,700 Plans $10	31,000
DISTRICT No. 10, M. E. GOUL, District Engineer, Montauk Highway at Little E. Neck Rd., Babylon, L. I., N. Y.						
Bronx	FA NETC 54-13P	New York State Thruway–New England Section Sub. 6 (Cont. 2) Proj. UI-1008(6)	(6.58 2.90	0" Cem. Conc. Pavt. Var. Wide=5.38 Mi. Asp. Conc. Opt.=2.13 Mi. Sheet Asp. Pavt.=1.96 Mi. Misc. and Electrical Work=0.01 Mi.	$215,000 Plans $50	3,904,000
Queens	FA HHE 54-1	Horace Harding Expressway, Sect. II (Cont. No. 3A) Proj. U862(5)	(0.40 Acc.) 0.53	Grad., Drain. & Misc. Work=0.53 Mi. Cem. Conc. Pavt. (Access)=0.23 Mi.; Asp. Conc. Opt. (Access)=0.17 Mi. Hy. Sep. Comp. I-Beam 242'	$144,000 Plans $100	2,626,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: January 3, 1955

City of Yonkers
New York

Sealed proposals for construction of Extensions & Revisions to Tube Well Pumping Station will be received by the Board of Contract and Supply of the City of Yonkers, City Hall, Room 316, Yonkers, New York until 2:00 o'clock P.M. Monday, January 3, 1955 at which time they will be publicly opened and read. No bids will be accepted after said hour. Proposals will be received on the following contracts:

Contract 1—Pumping Equipment
Contract 2—Heating Work
Contract 3—Rolling Doors

Information for Bidders, Proposal forms, Contract forms, Plans, Specifications and other pertinent Contract Documents, may be examined and obtained at the offices of Bowe, Albertson & Associates, Engineers, 110 William Street, New York 38, and at the office of the Board of Contract and Supply, City Hall, Yonkers, New York between the hours of 10 A.M. and 4 P.M daily except Saturdays, Sundays and holidays upon making a deposit of twenty-five ($25.00) dollars. The full deposit will be refunded to bidders and ten ($10.00) dollars to nonbidders who apply for a refund within 30 days after the date proposals are opened and who return the plans and specifications in good condition.

Extra copies of plans and specifications may be obtained at the office of the Engineers at the cost of Ten ($10.00) dollars each, which sum will not be refunded. Extra sheets of plans may be obtained at the cost of One ($1.00) dollar each, which sum will not be refunded.

A certified check or cashier's check made payable to the Comptroller of the City of Yonkers, New York in the amount of 5% of each bid must be deposited by each bidder with his bid as a guarantee that, in case the contract is awarded to him, he will execute such contract and furnish a satisfactory Performance Bond and Labor and Material Bond. Acceptance of the bid will be contingent upon fulfillment of this requirement by the bidder and on failure to do so, he shall forfeit the deposit.

The Board of Contract and Supply of the City of Yonkers, New York reserves the right to reject any or all bids, to waive any informalities or to accept the bid or bids which in its judgment will be for the best interests of the City of Yonkers.

BY ORDER OF THE BOARD OF CONTRACT & SUPPLY OF THE CITY OF YONKERS, NEW YORK
By: Agnes L. M. Mahoney
Secretary

DATED: December 6, 1954
BOWE, ALBERTSON & ASSOCIATES
Engineers

Bids: December 29, 1954

City of Dover, New Hampshire
Water Treatment Plant

Notice to Contractors

Bids are being received for the construction of a water filtration plant at Dover, New Hampshire. Plans and specifications may be obtained from the Chas. T. Main, Inc. Boston, Mass. or from the City Clerk's Office, Dover, New Hampshire, upon a deposit of $25.00. Closing time of bids (December 29, 1954 2:00 P. M. E.S.T.)

Dated this 1st day of December 1954.

The City of Dover, New Hampshire
By—Alfred J. Guilmette
City Clerk

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4228), will be received at Yuma, Arizona, until January 5, 1955, for furnishing labor and materials for: installing additional pumping units in Pumping Plants No. 1, 2, and 3— Wellton Mohawk Division—Gila Project, Arizona. Location: about 25 miles east of Yuma, Arizona. Principal items are: installing 5 main pumps; installing 5 pump motors; installing 10,200 lin. ft. electrical wire and cable; and other work. Completion time 120 days. For particulars, address Bureau of Reclamation, Yuma, Arizona; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.80 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.80 a line an insertion.

INFORMATION:
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

Send NEW ADVERTISEMENTS: To New York Office, 330 W. 42nd St., N. Y. 36 for December 30th issue closing December 17th

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Needed

STRUCTURAL STEEL DETAILERS
STRUCTURAL STEEL CHECKERS

Must be experienced Detailers and Checkers in Structural Steel Fabrication

For

PERMANENT EMPLOYMENT

Top Pay, Paid Vacation, Paid Holidays, Group Insurance Plan, Etc.

Openings in Orange and Houston, Texas

Apply Personnel Department

CONSOLIDATED WESTERN STEEL DIVISION

Orange, Texas

Housing Available in Orange, Texas:

One Bedroom Unit	$40 Mo.
Two Bedroom Unit	$43 Mo.
Three Bedroom Unit	$46 Mo.

All utilities, kitchen range, refrigerator and space heater included in above rentals.

YOUNG AGGRESSIVE SALES ENGINEER

With concrete pipe manufacturing background. This is an excellent opportunity for top-notch man possessing engineering experience and sales ability. Must have the technical knowledge to negotiate with consulting engineers and sell them on the use of a proven product. Territory is the South and Southeast. Reply fully, giving age, experience, education and salary requirements, to

P-4737, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SALES ENGINEER TRAINEES

Men, if you have civil or architectural engineering degrees or equivalent training and experience in building construction, here is a stimulating challenge to utilize this knowledge in a sales capacity. Because we are expanding our MILCOR line of engineered metal products for the building industry, there are additional openings for qualified candidates in our sales training program. Excellent outlook for advancement. Salary open.

INLAND STEEL PRODUCTS COMPANY
4101 West Burnham St.
Milwaukee 1, Wisc.

ENGINEERS

Foreign Service

Graduate Chemical, Mechanical, and Electrical Engineers with minimum of 5 years' experience. For specialized assignments commensurate with qualifications in various phases of project and process engineering. Write giving full particulars regarding personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 30

ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE, NEW YORK 22, N. Y.

ENGINEER

WANTED

Engineer with building construction experience wanted as Assistant Purchasing Agent and Expediter. Good opportunity for advancement with expanding Northern New York construction corporation. Give full resume, strictly confidential.

P-4662, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED

STRUCTURAL ENGINEER

With 5-10 years experience in steel and concrete design to work on design of pulp mill construction. Permanent position. Write: R. J. Kutchera, Chief Engineer

RAYONIER INCORPORATED
Hoquiam, Washington

GENERAL MANAGER

for small, conservative corporation operating throughout the Southeast in the production of concrete pipe and sand and gravel. Must be capable of assuming full responsibility. Reply fully, giving age, experience, education and salary requirements to

P-4758, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Don't forget the

BOX NUMBER

When answering the classified advertisements in this magazine don't forget to put the box number on your envelope. It's our only means of identifying the advertisement you are answering.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

BRIDGE—HIGHWAY Engineers—Designers—Draftsmen. For work on bridges, expressways and turnpikes. Location Midwest. Permanent positions with periodic promotions depending on experience and ability. Paid vacations, sick leave, hospitalization and life insurance. Include education, experience, reference and salary expected in application letter. P-4280, Engineering News-Record.

WANTED: YOUNG engineer to do design and layout work for precast products plant in Central Pa., now entering prestress to keep abreast of present day precast and prestress designs. P-4707, Engineering News-Record.

REGISTERED CIVIL Engineer (Michigan) for municipal engineering office. Desire a young man with a general background. Work primarily in street and sewer design. Future bright for capable man. State experience, availability and salary requirements. Write to Civil Service Office, City Hall, Dearborn.

CONCRETE PIPE Plant Superintendent with pressure and prestressed pipe experience capable of operating a large modern concrete pipe plant located in the South. Excellent opportunity for a top level production manager. Write fully, giving age, past experience, education, availability, salary requirements to P-4778, Engineering News-Record.

SURVEY PARTY Chief: Must be fully qualified to take charge of survey party on highway work. Write or call Garden 8-6695 for interview. Charles N. Savery Co., Cotuit, Cape Cod, Mass.

HEAVY CONSTRUCTION Engineer to design construction facilities and assist estimator. Applicant must be graduate engineer, preferably about 35 years old, with five years field experience on bridge or foundation work and five years as draftsman and designer on work of magnitude. Work in Pittsburgh office of nationally known, progressive contractor that offers responsibility and advancement. P-4867, Engineering News-Record.

STRUCTURAL ENGINEER for design and estimating of buildings and bridges who has had design experience with steel fabricator. Also need checkers. The Midwest Steel & Iron Works Co., P.O. Box 5384, Terminal Annex Station, Denver, Colorado.

ENGINEERS—TOP Flight for Field Work, estimating and Industrial design for Northern New Jersey Construction Company. Experienced. Reply giving full resume. P-4865, Engineering News-Record.

HEAVY CONSTRUCTION Superintendents and Superintendents for Industrial Construction. Northern New Jersey Construction Company. Experienced. Reply giving full resume. Box P-4864, Engineering News-Record.

EXPERIENCED BUILDING Construction Superintendent for long established expanding Eastern Pennsylvania firm. Excellent permanent opportunity. Salary plus bonus. State experience, personal data and minimum base salary. P-4862, Engineering News-Record.

MECHANICAL ENGINEER—Reg. P.E. 5 years minimum experience in design and specifications; Heating, Plumbing and Air Conditioning. Good Salary. Excellent future for qualified man 30-35. Permanent position. Interview arranged on basis of letter stating qualifications and salary desired. P-4861, Engineering News-Record.

CIVIL ENGINEER. Graduate. Five years engineering experience. To be City Engineer, City of Rock Island, Illinois in charge of five man department, paving, sewer, water projects. Salary $5,820-$7,068 depending on qualifications. Apply City Manager, City Hall.

POSITIONS VACANT

WANTED EXPERIENCED Estimator for small structural steel fabricator. Reply with complete resume and salary expected. Berger Steel Co., Lafayette, Ind.

CHIEF ENGINEER with well established company specializing in design and construction of modern cement manufacturing plants. Exceptional opportunity for right party with good background in this field. Location middle West. P-4833, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

SALES TRAINEE—Nationally-known company engaged in the manufacture and distribution of fabricated metal products has opening in New York City office for sales trainee with civil engineering degree. SW-4692, Engineering News-Record.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

EMPLOYMENT AGENCIES

WANTED ENGINEERS, Designers, Draftsmen-Structural, Architectural, M. E., C.E., E.E. and Ind., also Teachers and Chemists. Cleveland Engineering Agency, 2132 E. 9, Cleveland.

POSITIONS WANTED

OFFICE MANAGER Capable of assuming full responsibility for operation of contractor's office. Fourteen years experience in Government and private contracts. PW-4659, Engineering News-Record.

CONSTRUCTION MANAGER, Superintendent 51 yrs. C. E. Twenty five yrs. experience in charge for contractors. Capable and experienced in the estimating, planning, and all phases construction of dams, power houses, bridges, marine and subaqueous works. PW-4628, Engineering News-Record.

OFFICE MANAGER familiar all phases construction contracting business. Many years experience large projects Branch Offices Latin America. Speaks, reads, writes Spanish. Available immediately. PW-4525, Engineering News-Record.

CONSTRUCTION EXECUTIVE and Superintendent now in the midwest desires permanent location in the Pacific Northwest with contractor engaged in Industrial, Commercial, Municipal, or heavy construction. All replies answered. Address PW-4743, Engineering News-Record, 520 North Michigan Ave., Chicago, Illinois.

CIVIL ENGINEER MSCE, 31, 8 years design and construction experience. PW-4792, Engineering News-Record.

CHIEF ESTIMATOR, thoroughly experienced all phases construction industry including buying sub contracts, materials, managing field to produce good costs and soliciting new business. PW-4764, Engineering News-Record.

CONSTRUCTION ENGINEER—Graduate C.E. desires position as field or office engineer, U.S.A. or foreign. 25 years experience large building, housing projects and heavy construction. Fluent Spanish. PW-4763, Engineering News-Record.

CONSTRUCTION EXECUTIVE, available as project manager, on large operation, chief estimator for large organization or in other executive position where scope warrants employment of top man, thoroughly experienced on all types of construction and in every phase of general contracting. PW-4807, Engineering News-Record.

GENERAL SUPT. or Project Mgr. Foreign service only. Available after 1st of year. 24 years experience on construction of Piers, Docks, Cofferdams and driving of all types of piles, also underpinning, heavy concrete const., Tremie concrete and related work. Estimates, design, build (if necessary) and set up equipment for this type work. Engineering background. Excellent references. PW-4874, Engineering News-Record.

ESTIMATOR HEAVY Construction. Five years good varied field and office experience. New York area only. PW-4871, Engineering News-Record.

GRADUATE ENGINEER, 41 Licensed NYS major experience plumbing engineering; secondary sanitary, public health. PW-4870, Engineering News-Record.

POSITIONS WANTED

ENGINEER, 28, B.C.E. Six years experience; structural design, specifications, estimating, field supervision for bridges, industrial bldg's, and air-base construction. Desires responsible position with contractor or consultant engineers. Foreign work acceptable. PW-4860, Engineering News-Record.

CONSTRUCTION ENGINEER—Graduate C.E. with Master's degree in structures. Varied experience in field and as estimator. Will consider any opportunity in heavy construction or sales. Will relocate. Age 30. PW-4859, Engineering News-Record.

FIELD ACCOUNTANT! Cost; clerical detail; timekeeper; heavy construction experience. PW-4858, Engineering News-Record.

CONSTRUCTION ENGINEER—5 years heavy construction experience as contractor's engineer. Desires connection with progressive firm with opportunity to learn and advance. No objection to hard work or long hours. Licensed N.Y. State P.E. PW-4847, Engineering News-Record.

PARTY CHIEF—3 yrs. intensive experience on heavy chemical plant & refinery buildings. Fully familiar with wide level & theodolite & optical tooling equipment for precise equipment placement. 29 yrs. old, single, good health, 2 yrs. college, 7 yrs. general land survey experience. Will relocate, prefer overseas work. Excellent references. Available short notice. Reply PW-4846, Engineering News-Record.

VERSATILE MAN with years of experience in handling various phases of Construction, including Procurement, Material Control, Cost Engineering, Short Term Schedules, Progress etc. on large projects; also broad general business background in industry transportation and construction. Age 50; unbroken work attendance record over twenty years. Presently in five digit salary bracket in charge of construction engineering on government project; assignment completed January first. Salary secondary to opportunity and working conditions. PW-4825, Engineering News-Record.

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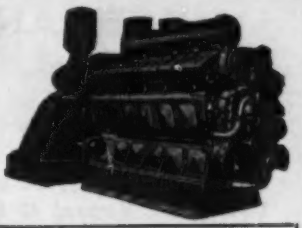

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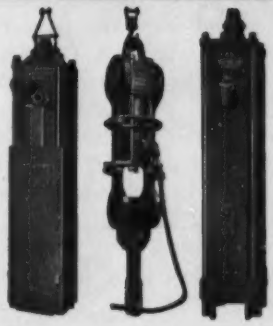

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EDITORIALS

Atomic Smog Also?

WASTE DISPOSAL PROBLEMS that are an inevitable accompaniment of the use of nuclear energy for power development were the subject of a paper by Abel Wolman and Arthur E. Gorman at the annual meeting of the American Society of Mechanical Engineers. The authors' purpose was to make the mechanical engineers aware of the magnitude the waste-disposal problem will attain as the world comes to depend more and more on atomic fission as a source of power, and to enlist their interest on solving that problem.

The authors of the paper noted that one aspect of the problem that will develop as soon as atomic power plants are built in populous areas where electric power is most needed will be that of monitoring irradiated air discharged by the plants. At the Brookhaven National Laboratory, irradiated air is discharged from a stack 300 ft high and the air of the surrounding rural region is monitored constantly.

The possibility that radioactive dust might be added to the atmosphere in regions where smog has become a health hazard raises a question as to why an atomic power plant should be built in a populous area until more is known about safe disposal of dangerous wastes from such plants. Power plants are built close to the load centers to reduce transmission losses. Possibly some increase in transmission losses as a result of building atomic power plants outside of thickly settled areas is the price that must be paid for safety from air pollution during at least the early stages of the development of this new source of power.

Glued Metal Structures

GLUE BONDING of wood structural members has been successfully used for more than a decade. Now, the development of metal-to-metal adhesives appears to have reached the stage where bonded construction might be considered as an alternative or supplementary means of connecting the metal elements of wall panels, partitions and similar lightly loaded structural elements. The question is when is bonded metal construction both feasible and economical.

Comparative tests made by the National Bureau of Standards on riveted and glued aircraft components indicate that the mechanical properties of both types of connections do not differ appreciably (ENR Dec. 9, p. 58). Some aircraft companies have taken advantage of the new adhesives in fabricating structural components, and some authorities believe that there is a good chance of widespread adoption of this method.

Properly designed bonded joints can be expected to develop strengths between 3,000 and 5,000 psi. These low strengths limit but do not prohibit entirely structural applications of adhesives.

Current bonding techniques, however, require application of heat and pressure in large-size equipment. Consequently, bonding may be economical at present only in factory applications, and in many cases, only when many identical items are to be produced.

A further drawback is inspection. A completely satisfactory method for non-destructive testing of bonded joints has not been devised. Yet, small changes in pressure, temperature and humidity during fabrication can produce imperfections that greatly decrease the strength of bonded joints, investigators of the Bureau of Standards report. And these imperfections at present can be detected only by destructive tests. So adoption of bonding for other than minor structural components may have to await development of more reliable inspection methods.

Better Relations with Truckers

INTERRUPTIONS to the orderly flow of construction operations by disputes within the trucking industry make very clear a real need:

The construction industry must take a more active interest in establishing closer liaison among all elements of the transportation group.

You don't need to go very far for a demonstration of how much and how quickly the truckers can affect builders. Two years ago, materials drivers in New York City halted almost all construction work in the city while they fought out a complicated wage dispute with their own management, and an intra-union political battle. Two months ago an abortive strike of truckmen for other industries also threatened to dry up construction supplies.

Similar occurrences in other cities are numerous.

In almost every case, both construction labor and construction management have had no official part in settling the disputes or even in discussing them. The reasons for this are many—but the principal one is that the truckmen, both drivers and employers, have never been widely accepted as members of the construction team. In labor's councils, the drivers sometimes sit with building tradesmen, more often they don't. In management councils, the truck operators almost never sit.

The answer must be to bring the truckers into the industry. This is no easy task: Such a move was made in New York during the two-month strike, when the local Building Trades Employers' Association offered membership to an association of truck operators. After some desultory discussion, the truckers did nothing about it.

Nevertheless, such efforts should be made or renewed. The building industry cannot afford to let uncontrolled arguments among fringe operators damage its own business.

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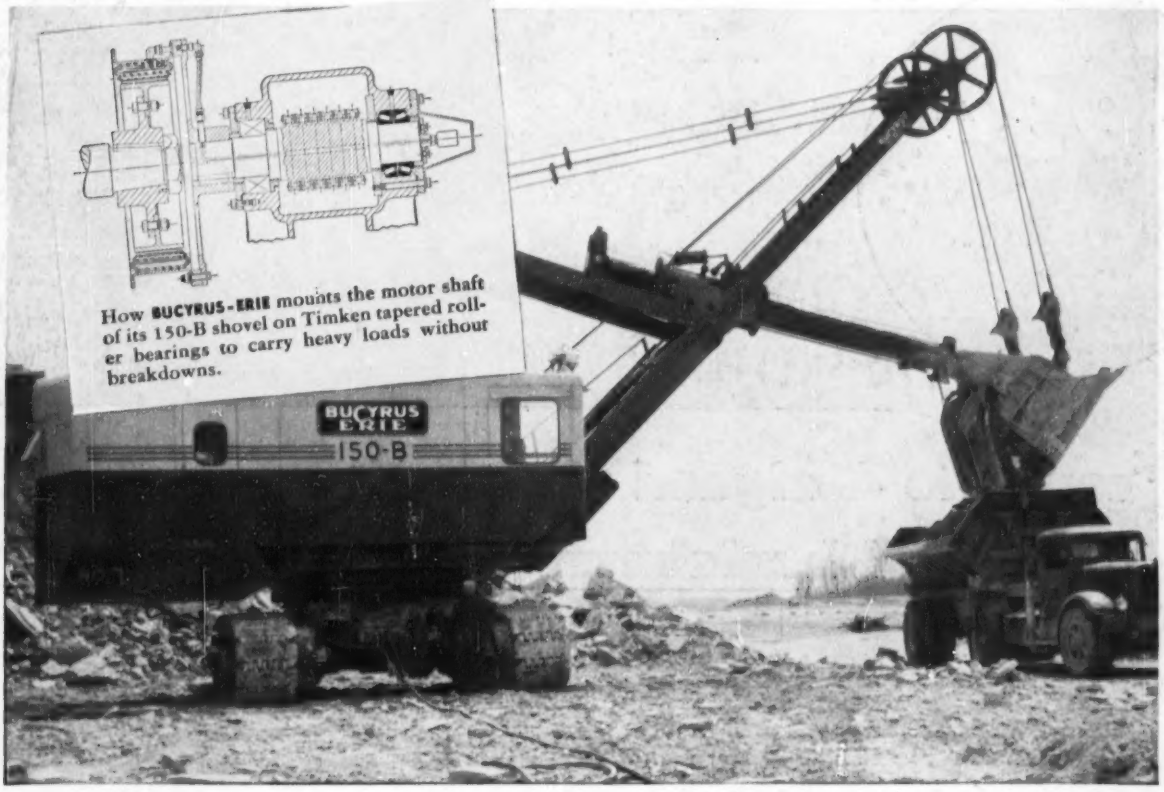
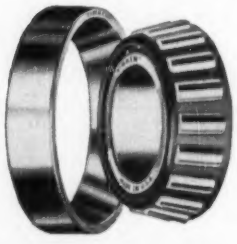


How **BUCYRUS-ERIE** mounts the motor shaft of its 150-B shovel on Timken tapered roller bearings to carry heavy loads without breakdowns.



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